

- [Contest Results](#)

- [2004](#)
- [2005](#)
- [2006](#)
- [2007](#)
- [2008](#)
- [2009](#)
- [2010](#)
- [2006 Sprint](#)
- [2008 Sprint](#)
- [2009 Sprint](#)

- [Previous](#)

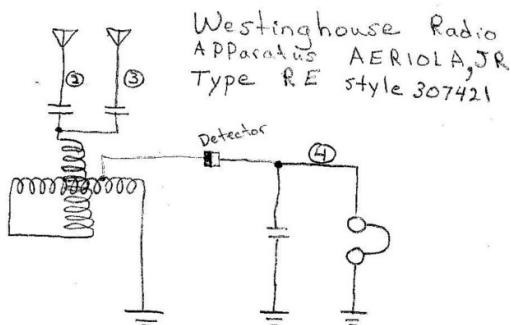
- [Next](#)

Radios Of The 2010 First Final Farewell DX Contest Contest Entrants

Page 3

Sean Whiteacre, Hobby Class Entry





Made in June of 1921

- ② This post is for stations Below 350 meters
- ③ This post is for stations between 350 to 500 meters
- ④ Terminal 4 for headphones

The Antenna taps are for Selecting the frequency coverage of the radio not for tuning the radio for better reception.

The radio is a Westinghouse Aeriola, Jr. I did not use a regular diode, but the real detector on the radio. The "Perikon" detector uses two rather rare minerals; Bornite in the fixed cup and Zincite in the movable section. Anyways I used the Perikon Detector. I also used the original 1921 C.Brandes Superior headphones from 1921.. Antenna was 25 ft in air and 150 ft long, Inverted L type.

Kevin Norton, Open Class, Loop Class and Active Device Class

I used the K-3 Big Litz Dx Set for the Open Class. It was the same set up as last year. For the Loop Class, I used a low Q loop built on cardboard box.

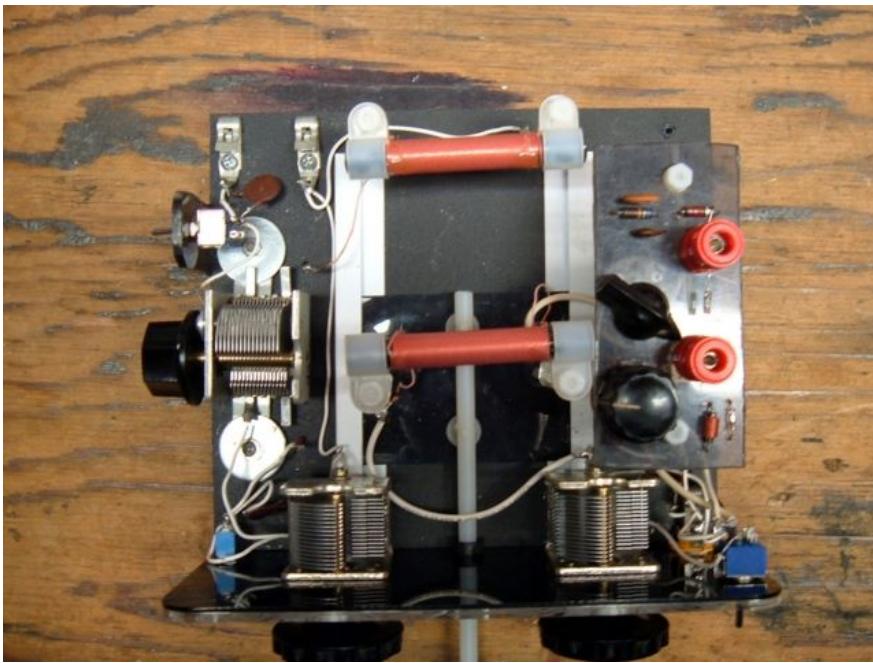
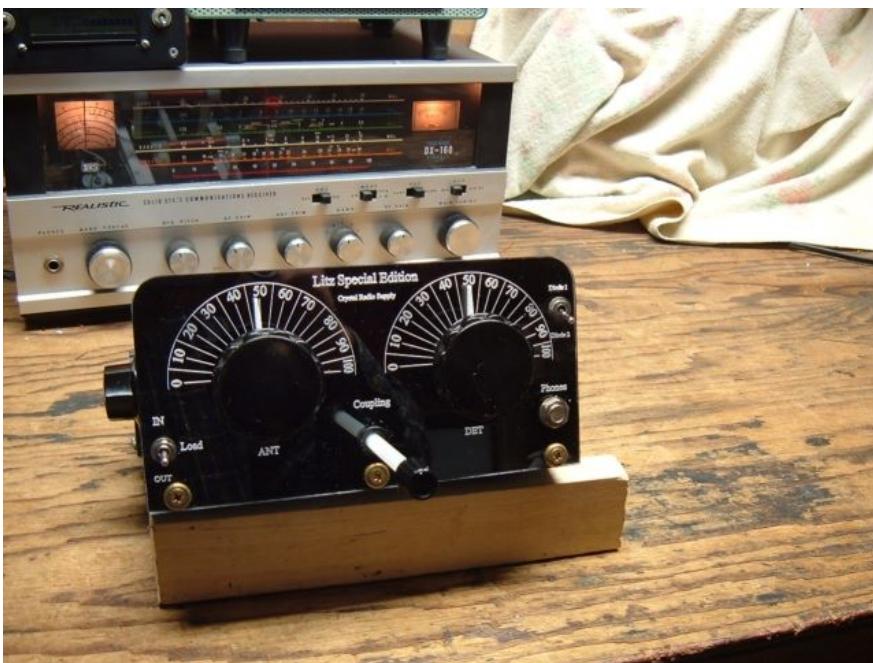
The Active Device Class entry was a WN6Q MPF-102 Regen (Via Owen Poole). I originally tried this as a double tuned set using 2x 660/46 ferrite assisted air coils, 4 gang ceramic wiperless variable caps, and a Litz air tickler. The regen set worked well, but was very hard to line up and very touchy. When the antenna tank was removed the set worked MUCH better! It still WAS a regen, and therefore still had a few flukes. It was MUCH more tamed, and Dxing became much easier.

The sets radiation was read off of my Icom R-70, so digital spotting was a snap. The final version was a single tuned tank of a ferrite assisted air coil, a 4 gang ceramic wiperless and crystal earphones in parallel. The antenna was VERY lightly coupled via a few insulated turns of a gimmick capacitor. At times, I could zero beat the set simply by turning my head a bit to one side!

I copied SOMETHING (anything from beat notes to ear splitting locals) on nearly EVERY frequency out of the 119 channels. Maybe 90 stations or more of at least very weak audio or better.

FWIW, I made a big boo-boo and left the set in place during a vicious white out snow squall. We had very high winds and blizzard type of snowfall rates. The antenna kept discharging arcs every 5 or 10 seconds. They could be heard in the next room. By the time I realized what was going on, it was too late. I pulled the antenna line off and measured the arcs, which by that time were down to around 3/4". To fry the set in the position it was in, they had to have been at around TWO inches (30 Kv??) to bypass the gimmick cap twists and leap to the set. Needless to say, a new FET had to be installed. Live and learn.

Glen Yarbro, Open Class



The set used was a Litz Special, modified to [Dave Schmarder's #44](#) wiring configuration. The antenna was 250 feet long and 30 feet high. The ground consisted of two 8 foot ground rods.

The set used an 1N34A diode and 4K Navy headphones. No wave traps were used. The spotter radio was a Realistic DX-60 with a frequency counter.

[Continued on Page 4.](#)

Select Menu

- [Home](#)
- [About Us](#)
- [Contest Results](#)
- [IAD Contests](#)

- [Contest Results](#)

- [2004](#)
- [2005](#)
- [2006](#)
- [2007](#)
- [2008](#)
- [2009](#)
- [2010](#)
- [2006 Sprint](#)
- [2008 Sprint](#)
- [2009 Sprint](#)

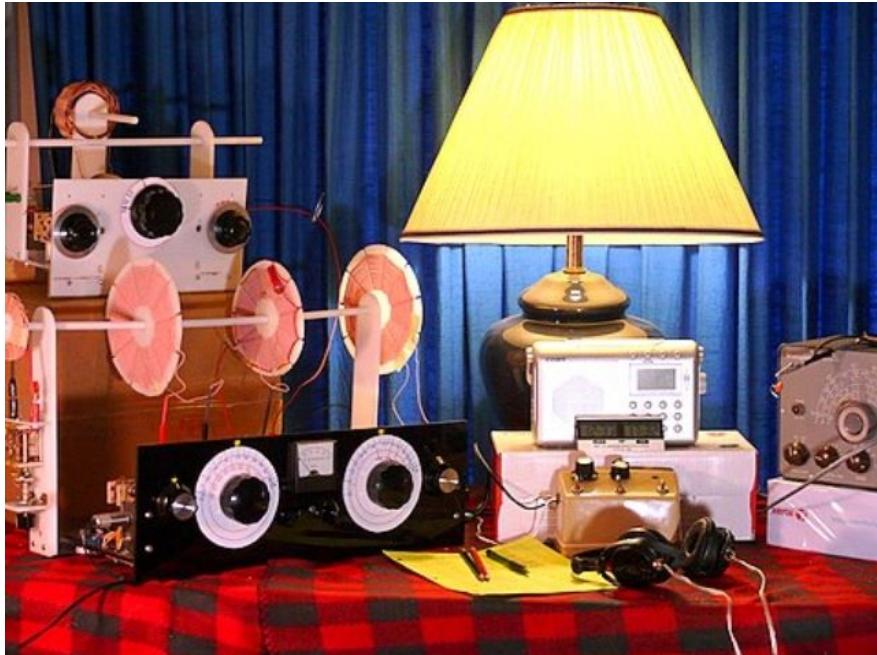
- [Previous](#)

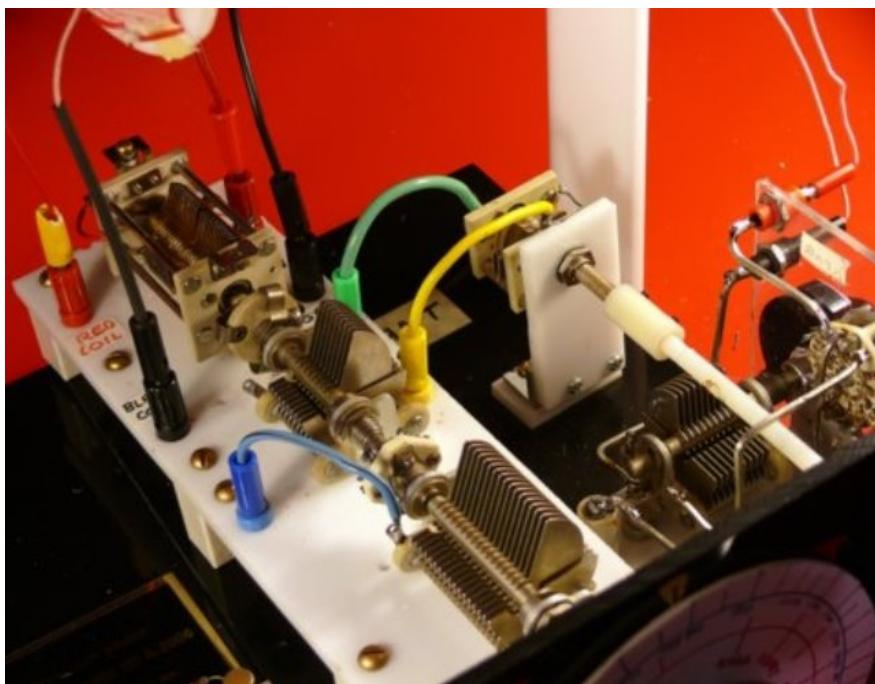
- [Next](#)

Radios Of The 2010 First Final Farewell DX Contest Contest Entrants

Page 2

O. T. Anderson, Open Class Entry



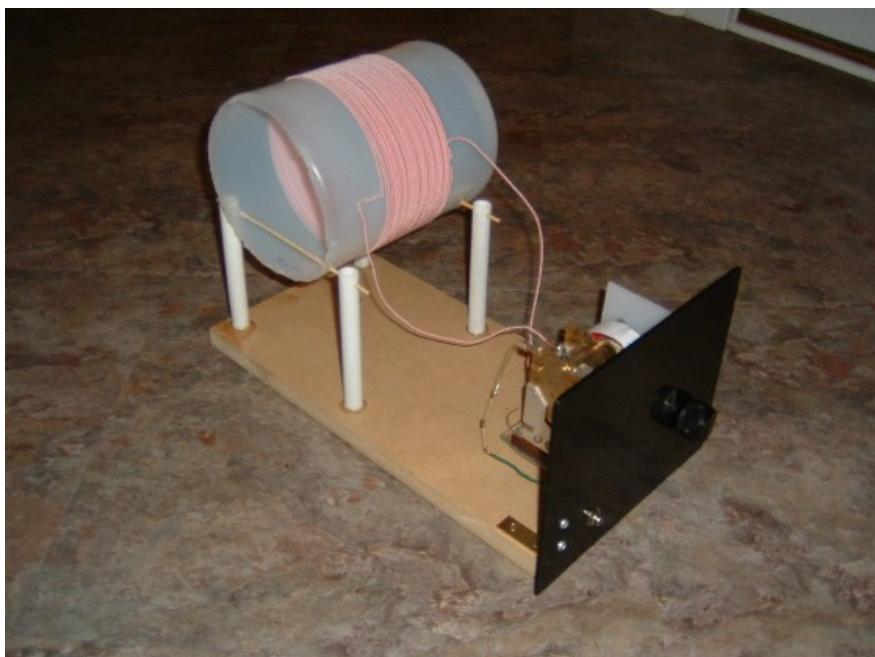


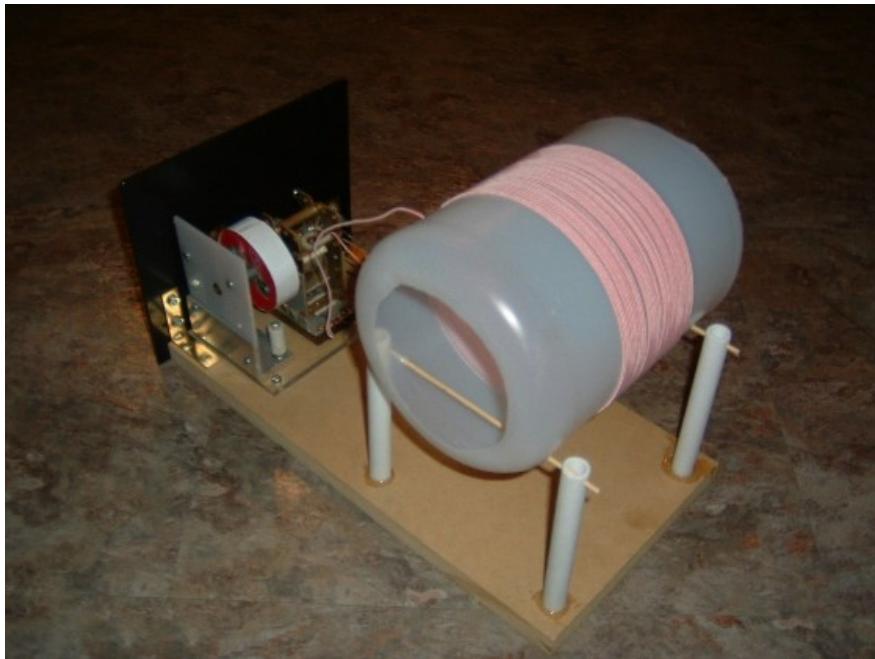
This is the same crystal set I used last year with a few revisions. I had 66 stations last year and my goal was to double it. The Mexican stations come in good in Oklahoma.

This crystal set is the same as last year with 3-4 updates.. The extra coils are wave traps for knocking out that KFAQ, 50,000 watts, in sight of our house. Also another 50K across the town. Up high is a new wave trap with silver caps. It will tune any local station. The pictures also shows a "Drug Store" spotter and a Knight Sig Generator. The two dials show the freqs and also spots several local stations. The right dial has another calibration, one is the 1700 to 530 freqs, the other calibrations is the high end freqs when using only the 140 mmfd condenser, about 1750kcs to 1000 kcs. Lots of band spread.

The other picture is the RF section with a silver cap at the far end. It tunes the antenna. The small var cap with the nearest blue wire connects the 2 nearest caps for all the freq 1700 to 540, normal use. With the blue wire not connected we use only the 140 mmfd cap, tuning about 1750 to 1000. This gives good band spread at the high end. The blue and yellow wires connect a 15 mmfd var cap, helps to "rock" in a distant station. If I good get rid of that terrible KFAQ signal things would be a lot better.

Jack Bryant, Open Class Entry



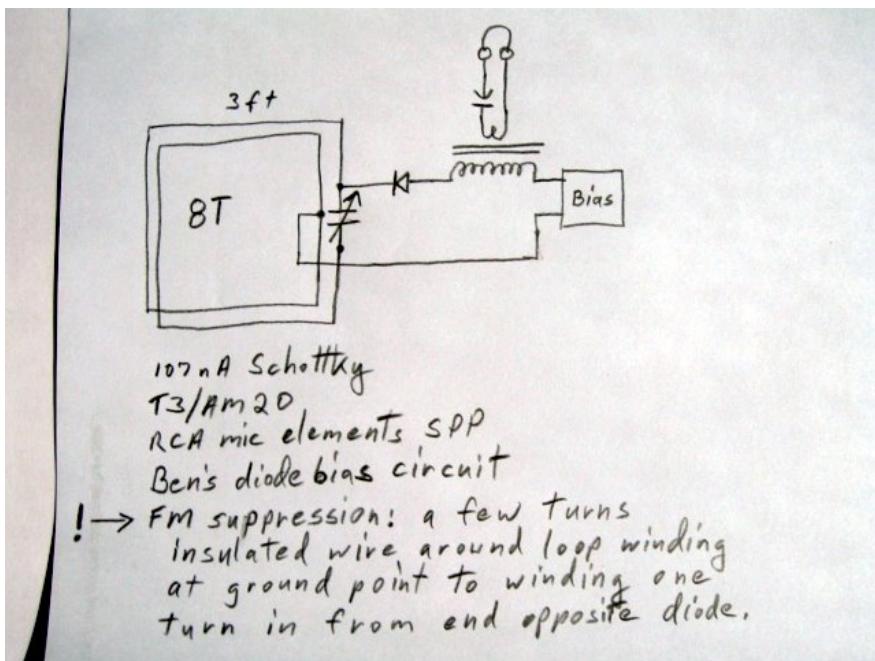


I only worked the last week of the contest, focusing on the broadcast band. I used essentially the same set for that I used in years past.

I have used a Realistic DX-398 for several previous contests, and I used it for this one, too. I used a PC for logging along with paper copy backup. I used a four foot table from Lowe's as my listening post.

Garry Nichols, Loop Entry





(Note from Jack: don't you just love the back of the envelope schematic! A wise sage at work use to say that if a detailed study didn't agree with the broadbrush, back of the envelope calculations, then the detailed study was probably wrong!)

A few changes for my loop this year:

- 1) Turns spreaders at the midpoints of the frame tightened things up and stopped rattling wire. Don't know why I didn't do this sooner!
- 2) I seriously reduced my troublesome FM interference with a simple trick. Somehow I noticed that a few pF across some of the loop turns seemed to reduce it. So I experimented first with a tiny variable (which turned out to have too many pF even fully open) and then with a small length of thin teflon insulated wire. The best positioning was from the exact center of the total winding across a few turns to a position one turn in from the end of the winding opposite the diode. I put it there to possibly help balance the loop because I use the other half of the winding for the detector. A few turns of the wire around each winding did the trick.

The upper half of the BCB used to be plagued by FM. It was difficult to tell if I was hearing a weak AM station or FM interference unless I spent some time listening. A real pain! My mod suppressed interference on the upper half and I can only hear FM if I tune above 1700. A lucky break after on and off problems for years!

- 3) I tried Ben's diode bias circuit this year along with my favorite 107 nA Schottky diode. I had to bias the diode, so that it appeared to have a higher saturation current. A bit more, lower in the BCB, and a bit less near the top. Fits theory pretty well! I used only the T3/AM20 transformer on my RCA mic elements to avoid possible problems with the Select-To-Match circuit and the bias circuit not getting along. How best to hook the two up left some doubt. For my setup, I could never decide if the STM was better than the T3/AM20 alone anyway.

Dan McGillis, Open Class Entry and Active Device Entry

I used two radios in the 1/15/10 contest.

For the BCB Crystal radio section, I used a simple double tuned Mystery set made with dual-gang capacitors from Leeds Radio and ferrite rods wound with 165/46 litz. It's described [here](#).

It was a very good daytime performer, but only a fair night time DX catcher. The bandwidth was just a bit too wide for all the strong DX stations and the digital hash which now seems to be everywhere at night. Still, it's a nice loud little radio.

For the active device section, I used a 2-JFET Regen plus an op-amp audio amplifier with an active bandpass filter. My primary goal was to be able to copy Morse code (CW) in the 40 meter ham band (7 MHz). The radio is described [here](#).

The performance of this simple set-up really surprised me. It's an excellent CW receiver -- stable, quiet, sensitive, and selective. Excellent for SSB and AM too. A real keeper. I even managed to make some 2-way contacts on 40m using this receiver and about 3 watts of transmitting power. That was a lot of fun.

Jerry Walker, Open Class Entry



-The crystal set used was double tuned.

-The antenna was a 75 ft long wire.

[Continued on Page 3.](#)



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Select Menu

- [Home](#)
- [About Us](#)
- [Contest Results](#)
- [IAD Contests](#)
- [IAD Entries](#)
- [Antenna Matching](#)
- [Antennas](#)
- [BHAM Radios](#)
- [Crystal Contests](#)
- [Crystal Radio Entries](#)
- [Sprint Contest](#)
- [Headphones](#)
- [Projects, Mods](#)
- [Favorite Links](#)
- [Contact Jack](#)

Sub Pages

- [Main Page](#)
- [2004 Page 1](#)
- [2004 Page 2](#)
- [2004 Page 3](#)
- [2005 Page 1](#)
- [2005 Page 2](#)

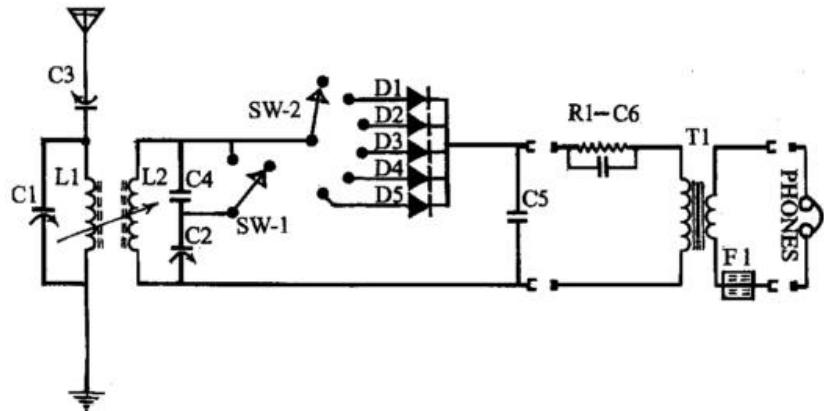
- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

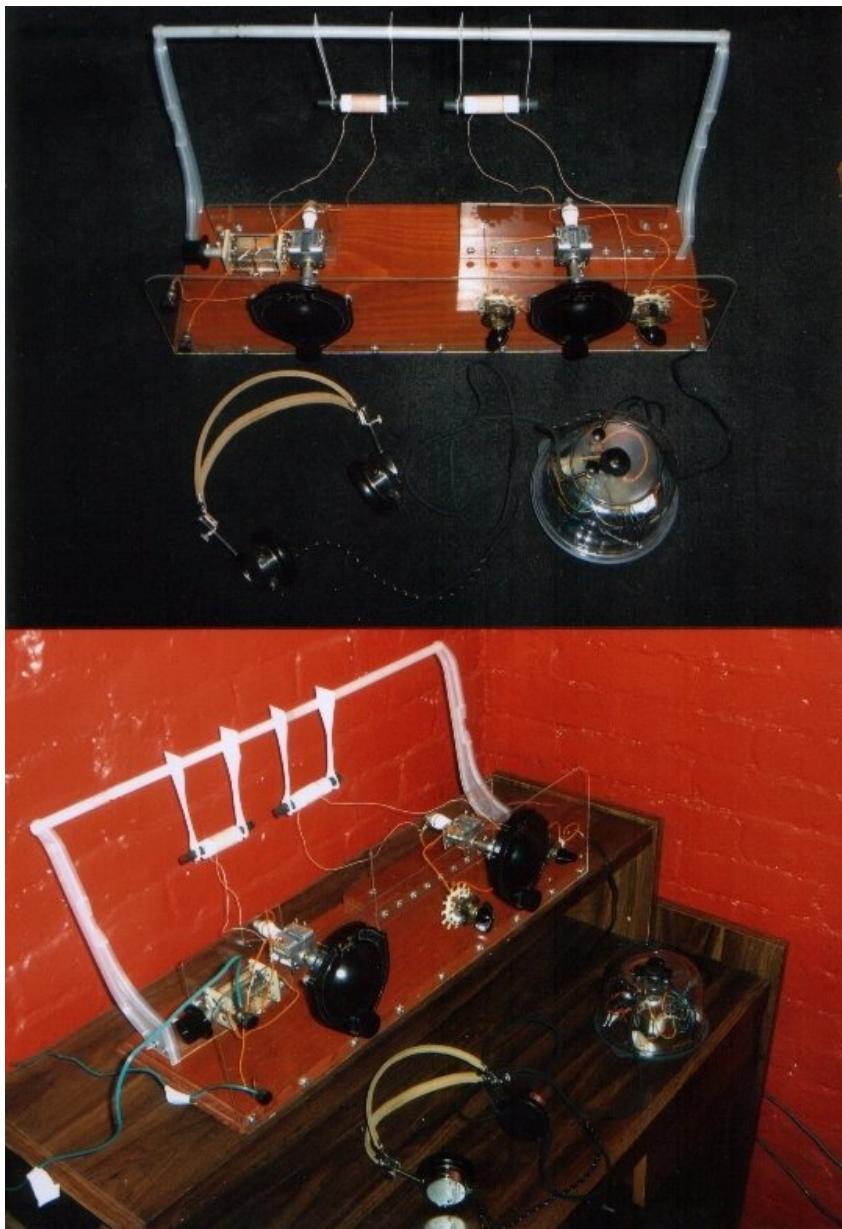
Crystal Radios Of The 2009 Contest Entrants

Page 4

James Gallant, Open Class

2009 DX CONTEST SET - JIM GALLANT





Due to a dispute with a former landlord (NOT related to the radio), I lost my previous office, radio loft, and 5 story high, 115 foot long-wire antenna for this year's contest. I also used the same mediocre "throw together" 100/46 Litz wire dual-tuned set that I whipped up last year. I still used my simple Bogen T-725 transformer driving a pair of 1925 vintage Western Electric 509-W headphones. I had to run it all off a long-wire antenna only 20 feet or less off the ground, bent around all over the place to fit my back yard.

Strangely, this year the radio seemed to work FAR better with the antenna (series) matching capacitor moved from the antenna line above the ATU tank, to the ground wire BELOW the ATU tank; most likely due to the vast differences between two antenna sites used with the set in 2008 and 2009. This gives further evidence of how two different builders with two basically identical sets have been getting different results as to where to put the ATU series capacitor. With the same radio, radically DIFFERENT results, depending on the antenna used).

My only other change was the replacement of the approximately 46K fixed resistor in my "Benny" with a 250K audio taper pot - a noticeable improvement.

I assumed the set performance would be much worse overall than last year, but I was pleasantly surprised. Although it did have poorer overall reception of New England area stations, it did as well or BETTER on DX. In fact, I raised my total station count this year from 62 to 68 stations, with fewer of them being locals (Nashville was my furthest hit, I believe). It raised my points from 42,000 to over 64,000 - a 50% increase. I attribute this to the fact that this is my second contest.

I am getting more capable with the "spotter radio" in identification of stations, as well as hunting stations down on the Crystal Set after first isolating them with the spotter. Hopefully for next year I will have a 660/46 Litz "dream set" hooked up to a nice set of SP phones and a decent 30 foot high, 50 foot long 4-wire flat top antenna squeezed into my yard. My overall goal is fairly modest. Massachusetts is notoriously BAD for crystal radio DX. The glaciers in the last ice age pushed billions of tons of soil down into the Atlantic Ocean south of Connecticut. As a result of this, we have poorer and less efficient grounds than other regions.

Assuming a 450 mile average maximum DX "listening circle" for the average set, over half of MY circle here in coastal Massachusetts is to my east, over the wide open empty ocean. If I can ever manage to break a 100 station level count, I will consider that winning my own personal gold medal!

James D Fletcher, Hobby Class



I built the MRL No. 2A "Long Distance Crystal Set" from plans I got from Mr. Elmer G. Osterhoudt. I used parts from what I had on hand and wound the coil on PVC pipe. This was in 1979 and my oldest son was 10 years old, so this was a project we worked on together and gave him some practical experience he still uses today.

I put the works in a 8" x 5" oak file box that office supply stores used to sell. I use a type "C" Baldwin headset that really makes a difference compared to regular headsets. This is the same set that I used in the 2008 Contest.

Lem Morrison, Open Class



- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

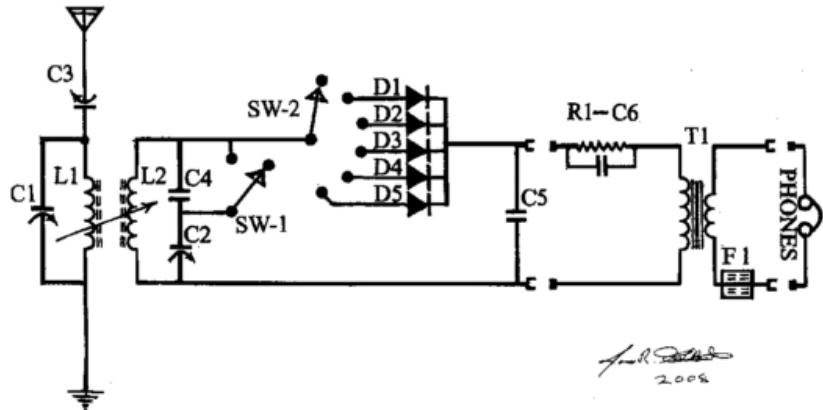
Crystal Radios Of The 2008 Contest Entrants

Page 3

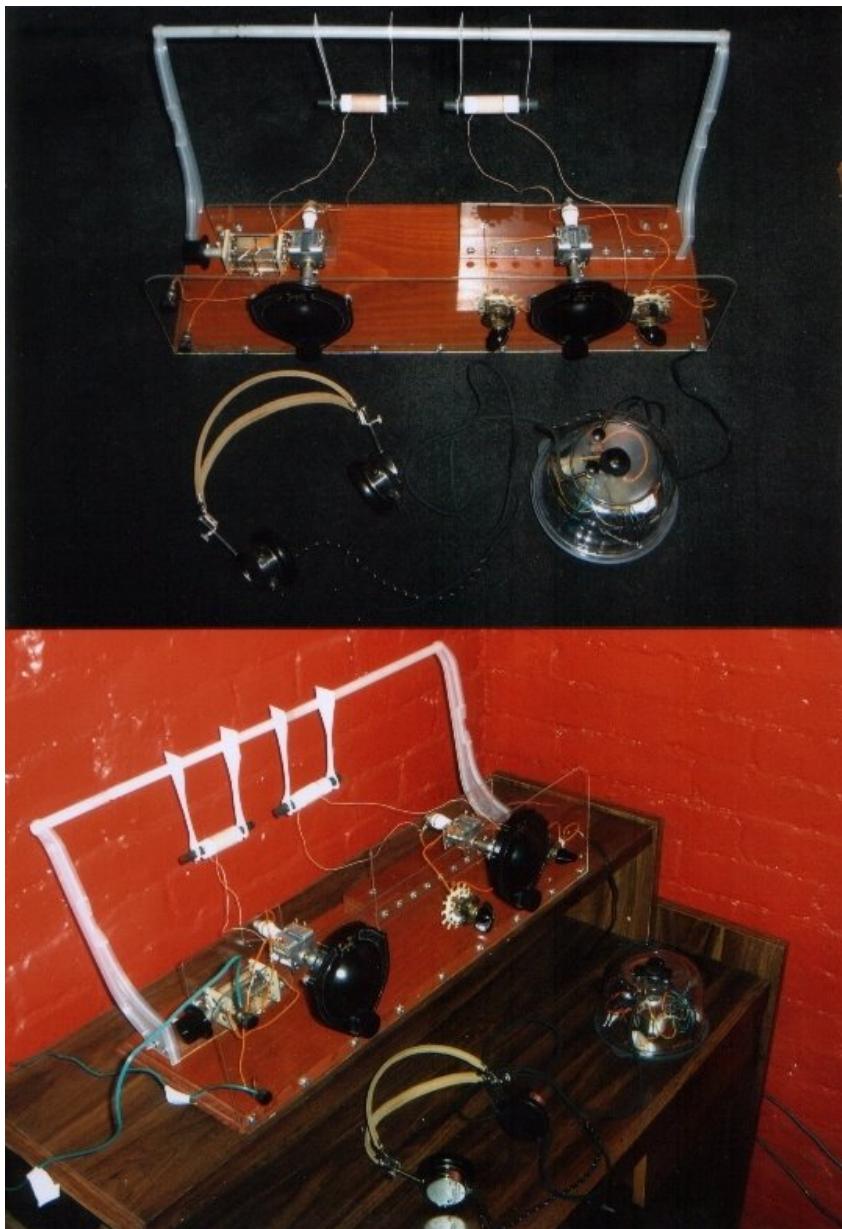
James Gallant

[View Page 1, JPG File](#)

2008 DX CONTEST SET – JIM GALLANT



[View Page 2, JPG File](#)



[To the main page.](#)



Select Menu

- [Home](#)
- [About Us](#)
- [Contest Results](#)
- [IAD Contests](#)
- [IAD Entries](#)
- [Antenna Matching](#)
- [Antennas](#)
- [BHAM Radios](#)
- [Crystal Contests](#)
- [Crystal Radio Entries](#)
- [Sprint Contest](#)

- [Contest Results](#)

- [2004](#)
- [2005](#)
- [2006](#)
- [2007](#)
- [2008](#)
- [2009](#)
- [2010](#)
- [2006 Sprint](#)
- [2008 Sprint](#)
- [2009 Sprint](#)

- [Previous](#)

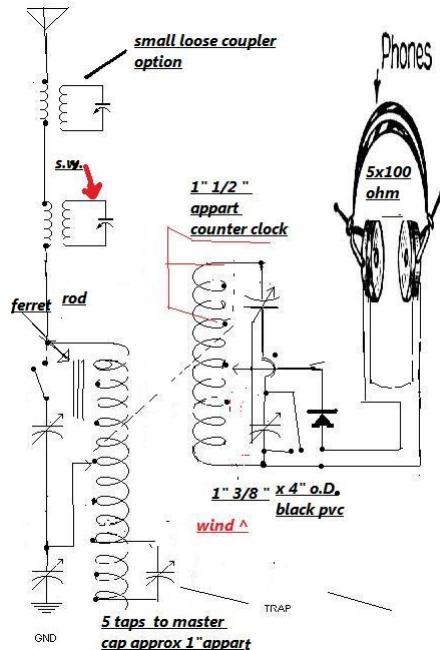
- [Next](#)

Radios Of The 2010 First Final Farewell DX Contest Contest Entrants

Page 4

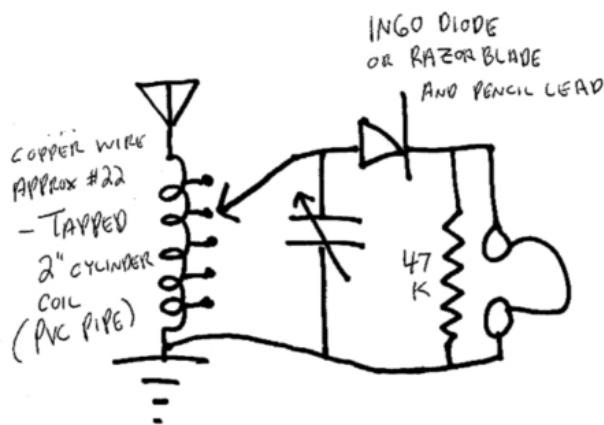
Dan Denapoli, Open Class and below BCB Class



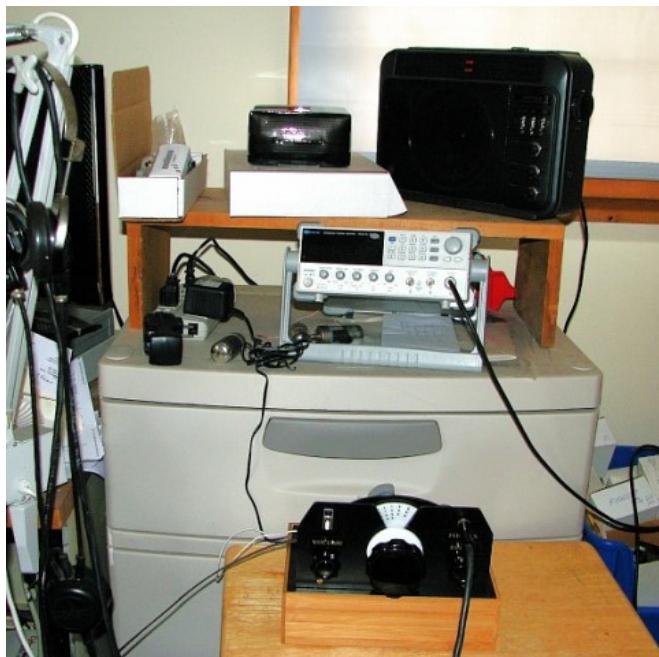


Chris T, Hobby Class





Dave Schmarder, Active Device Class



[Click here](#) to go to my website and see what I did this year:

- [Single 7C5 Loctal tube regenerative radio with 6 volt filament and 25 volts DC plate](#)
- Two tuned circuits using toroidal forms. Single tuning control
- Sound powered headphones
- Antenna, 40 meter wire up 3 - 4 meters running east to west.

Robert Weaver, Active Device Class

This year, I have two different active device receiver entries. One is a direct conversion receiver using a sheet beam tube, that I built two years ago, and used in the Radioboard summer DX contest in 2008, but never in this contest. Shortly after I built it, I built a sheet beam superhet receiver and the direct conversion receiver was mostly forgotten. I wanted to dust it off, make a few improvements and enter it in another contest. It took a while to get to it. So, I began the contest using the same superhet that I entered last year. That receiver is completely unchanged, and you can find a description of it under the 2009 entries, or see the [writeup on my webpage](#).

The direct conversion receiver has a tuned front end to help reduce interference from strong local stations and out of band signals. The signal enters the control grid and is mixed with the oscillator signal which appears on the deflectors. The result is an audio signal which appears as a differential signal on the plates. This audio signal drives the push pull primary of the interstage audio transformer. The secondary is connected back to the control grid in series with the incoming RF so that it is amplified reflex style. The resulting amplified audio is now a common mode (in-phase signal) at the plates, and so has no effect on the interstage transformer, and passes through the primary winding and on to the output transformer which is in series. The secondary of the output transformer drives the headphones.

Feedback for the local oscillator is taken differentially from the plates, through an audio blocking capacitor to the primary of the oscillator coil. One half of the secondary of the oscillator coil forms a tuned circuit with one gang of the variable capacitor. This side of the secondary drives one deflector, and the other half of the secondary produces an opposite phase signal to drive the other deflector. This oscillator is very stable and is almost completely immune to pulling towards the incoming RF. In fact this is a bit of a disadvantage, because it makes it very touchy tuning in AM signals without getting a beat frequency.

In the first version of this receiver, I had included feedback from the cathode to a one turn tickler on the RF coil, to provide a small amount of regeneration. However, after making a number of modifications and tests, I finally concluded that there was little to no benefit. So, I finally removed it. [A description of the receiver is here.](#)

There is a DPDT switch which reverses the phase of the interstage transformer secondary. This is to correct for slight unbalances in the tube which could cause oscillation when the volume control is turned all the way up. There is a bit of phase shift that varies across the band, and so the best position of the switch changes at different frequencies. I had tried various other plate balancing techniques (such as in my superhet receiver) but found that nothing worked as well as the reversing switch.

The receiver worked reasonably well. It was built as an experiment to see what could be done with a sheet beam tube. If you read the write up on my website, I sounded much more enthusiastic right after I built it. However, nearly two years later, and having built a better receiver in the interim, I find that listening to AM for any length of time on this set can be tiresome with the touchy tuning and almost constant beat tone. So, after using it for a couple of days and logging a respectable number of stations, I retired it and switched back to the superhet which outperforms it in almost every respect.

It seems that each year, I manage to learn a new trick or two. This year, I connected a set of wavetraps between my loop antenna pickup coil and the receiver. I wasn't sure how wall wavetraps would work with the loop. But, using the antenna orientation to null out a local station on 860kHz, and then using two of the wavetraps tuned to the same frequency to further null it out, I was able to log my first station ever on 870 kHz: WWL New Orleans, which by the distance/power formula was my second best catch of the contest. My best catch was KVNS 880, Brownsville TX. Attempts to log a MW station outside of North America have failed so far. Hopefully, one of these days it will happen.

[Return to the index page.](#)



Select Menu

- [Home](#)
- [About Us](#)
- [Contest Results](#)
- [IAD Contests](#)
- [IAD Entries](#)
- [Antenna Matching](#)
- [Antennas](#)
- [BHAM Radios](#)
- [Crystal Contests](#)
- [Crystal Radio Entries](#)
- [Sprint Contest](#)
- [Headphones](#)
- [Projects, Mods](#)
- [Favorite Links](#)
- [Contact Jack](#)

Sub Pages

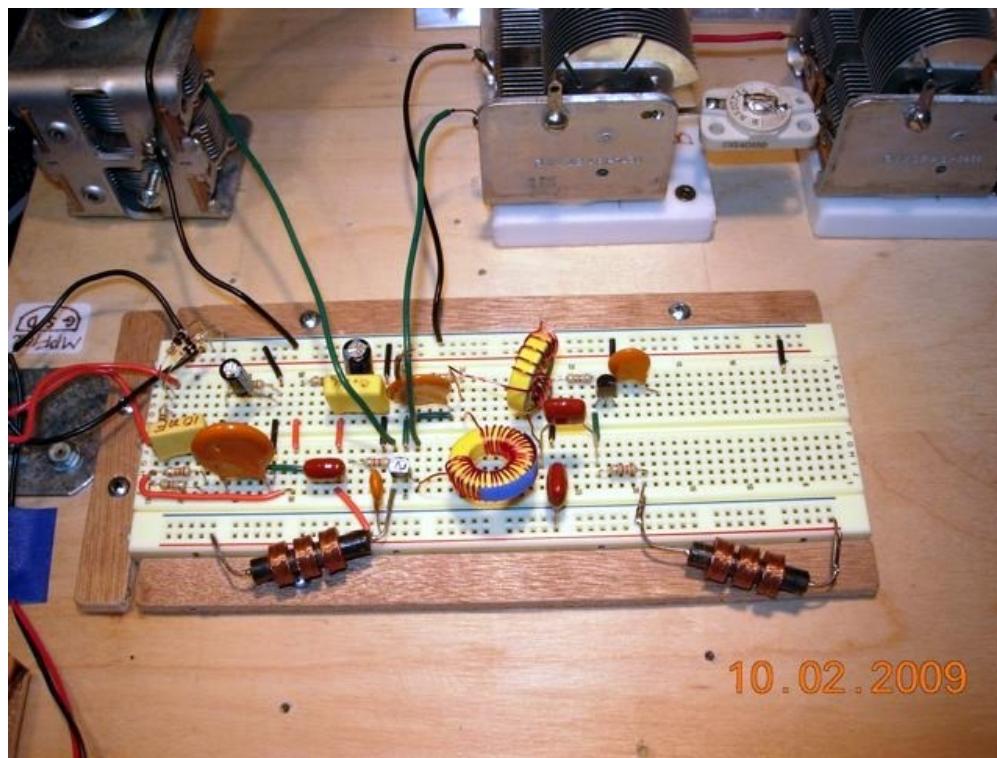
- [Main Page](#)
- [2004 Page 1](#)
- [2004 Page 2](#)
- [2004 Page 3](#)

- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

Crystal Radios Of The 2009 Contest Entrants

Page 5

Dan McGillis, SW Class (regen set)



Thanks again for letting me enter my SW regen (with it's Radio Shack amplified speaker) in the '09 Sprint contest.

The contest gave me the needed nudge to really exercise the receiver and learn about its strengths and weaknesses. I only tuned a lower CW portion of 40m (7.025 - 7.070 MHz) but there were hundreds of stations that could have been copied over the weekend period. Turns out there was a PA QSO party and a FISTS contest part of the weekend also. So there were weak and also extremely strong signals everywhere.

But I wasn't in the contest to score lots of points. I wanted to evaluate the receiver on weak & strong signals, so I restricted my station search to those calling CQ, especially the weak ones next to strong signals.

[Click here for a link](#) to Dave Schmarder's RadioBoard with a schematic and discussion of the radio.



Dave Schmarder, BCB Class (crystal set)



Here is the link to my [contest entry](#). I just put up the Google map, so the page is now ready. I received 73 stations in the contest on my #76 crystal set. I had fun using my band pass radio. The outcome was better than I had expected.

Glen Yarbro, BCB Class (crystal set)

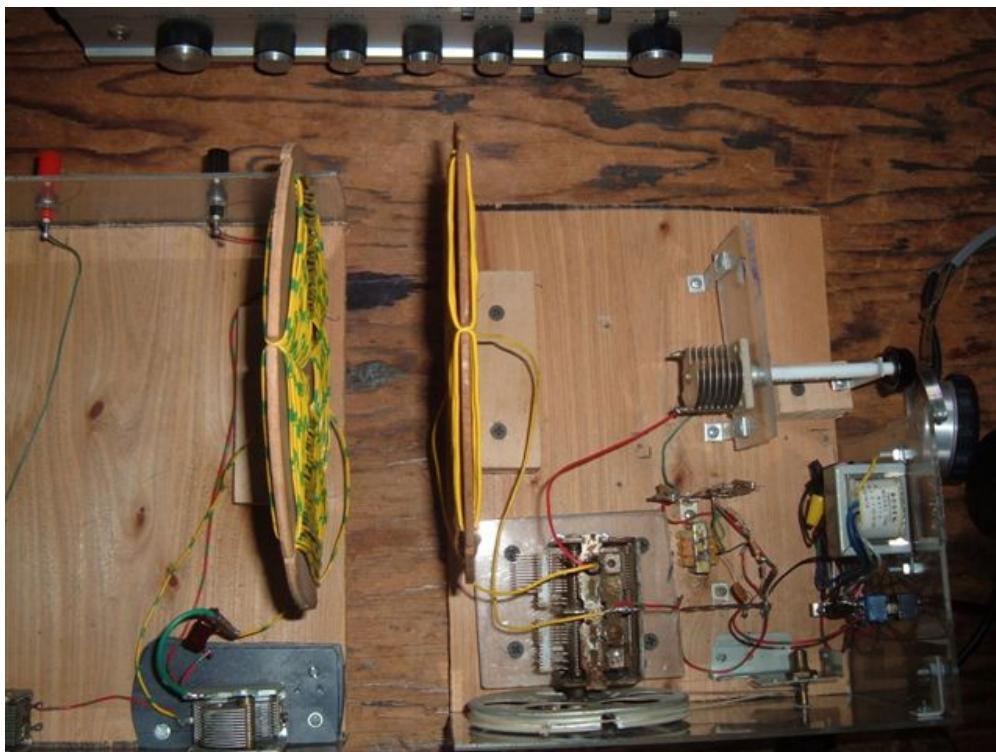


Dave's crystal radio #44

Headphones: Navy 4k

Diode: 1n34a

Antenna: 300 ft long wire



Gary Nichols, BCB Class (regen)

I was using a single J310 regen with a B+ of 4.5V. My tuning range was a bit below and above 680 and 1320. I forgot to measure it and I've already taken some of the set apart in preparation for mods.

The restricted tuning range was due to the 30-145 pF ARC 5 variable that I like to use because of the really slow and precise worm drive. The set was a bit of a last minute effort, so I gave up on extending the range. I had plenty of stations to listen to anyway. My problem was that it seemed more difficult than usual to ID stations based on the info broadcast. There were a lot of games on over the weekend evenings and also the usual "sports talk" stations which are as bad as Radio Disney to identify, it seems.

I also forgot to listen for my area stations during the day! Ooops!

The antenna was about 50 ft of wire sloping to the ground from a 2nd floor window (10 ft of it inside). I sloped it south-westerly for possilbe best performance from my location here in the northeast near Syracuse, NY. My ground was the nearby 2 draw metal filing cabinet. One time I sat down to listen and noticed more than the usual hand capacity. I quick check and I realized I hadn't hooked up the filing cabinet!

I used a "Brinthurst String" (5.6, 10, 22, 47 pF) of "clip selectable" fixed series caps between the antenna and top of the L/C to control signal strength and "pull" the tuning a bit up and down band.

James Kearman, BCB Class (regen)



My receiver was a homebrew solid-state regen, the one [shown here](#). I used a homebrew air-core loop, 14-foot circumference.

Sean Whiteacre, BCB Class (crystal)



The diode is a FT-205 Type. I used Dynalec Headphones and RCA Large Can Sound Power headphones.



Jack Bryant, Two-way Shortwave Class (regen)



I participated just a bit in the contest. I started Sunday night and made a two contacts and then one more early in the morning. The set you see was "rescued" from the Shelby, NC hamfest a few years ago. It was beautifully made with a plexi-glass case and painted front. It was sold as a non-working unit. I hated to see this fine construction job go to waste. The rig had a two tube crystal controlled transmitter and a two tube receiver, all in one package.

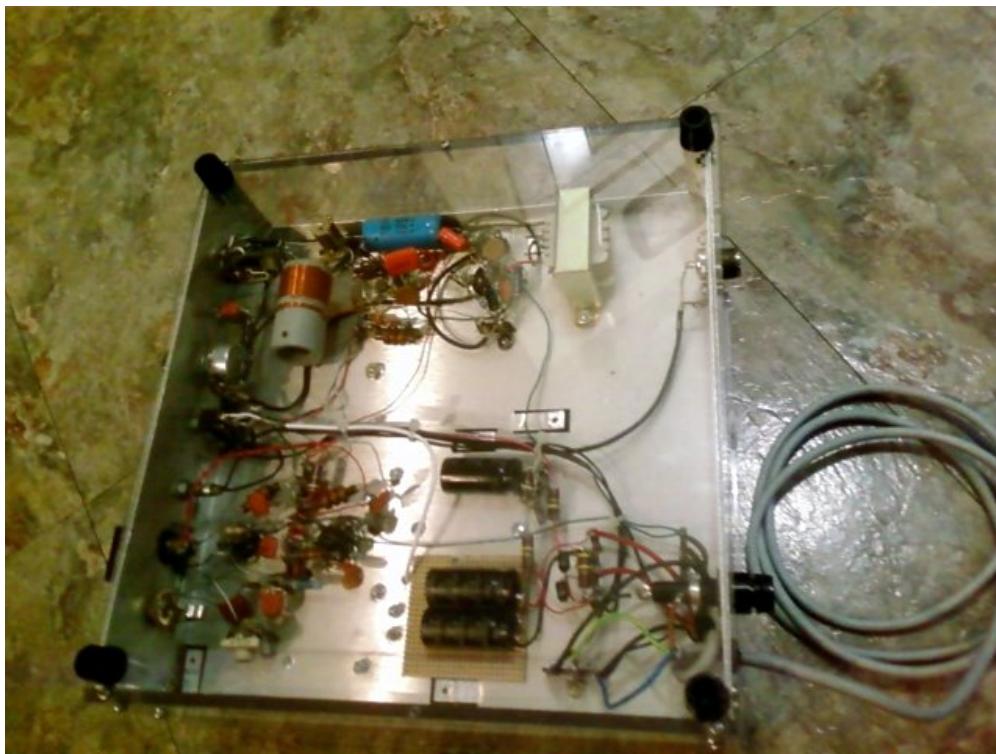
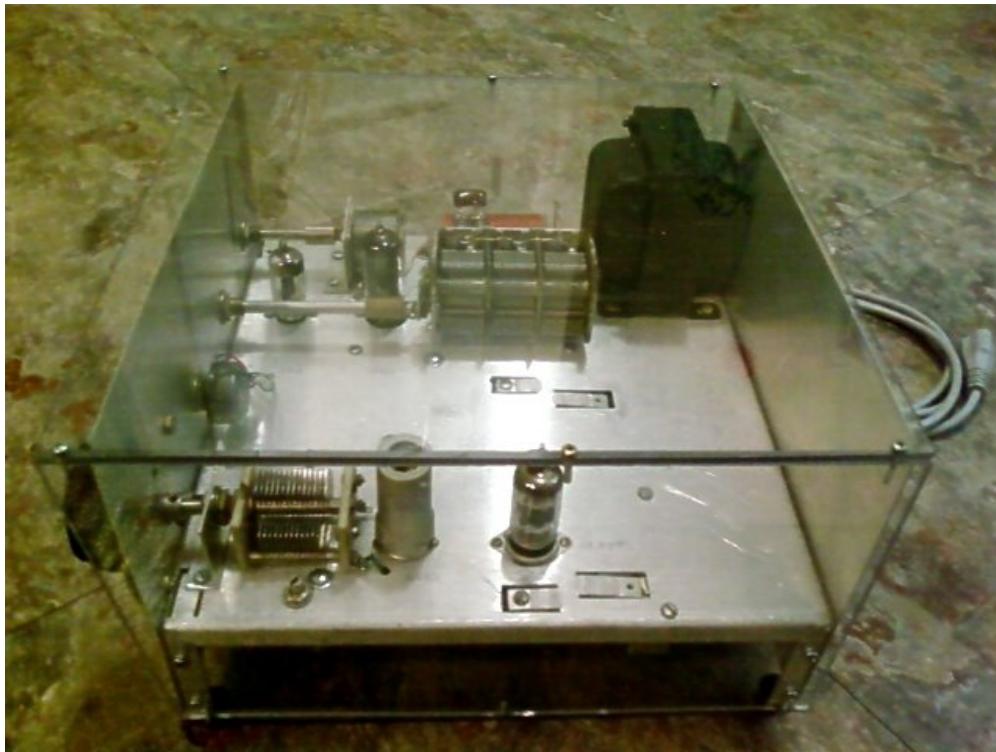
The receiver did work but covered about a 3 MHz tuning range. The vernier was a tiny one. I swapped it out for a NOS Velvet Vernier. The tuning range was narrowed down considerably, now covering roughly 3.500-3.508 MHz. I changed the top coupled detector antenna cap to 1.5 pf. The plate voltage on the regen detector was reduced from about 130 volts to 22 volts. The power cord was changed to a three prong cord.

The change in receiver performance is dramatic. The receiver is now very usable. I wanted some additional selectivity, so I put a .005 uF cap across the primary of the audio output transformer. I fed the audio output into my PC and used the Spectrogram program to check out the bandwidth. The audio peak is between 400 and 800 Hz, just right for my ear. The tube lineup is a 6CY5 detector and a 12AX7 two-stage audio amp.

The transmitter initially did have some output, but it was acting strangely. It turned out that the pi-network output of the transmitter had to be redesigned. It worked, but with an output at 40 meters instead of 80 meters! Some turns were removed from the coil and new fixed capacitors were installed. The output variable cap had to be changed as well. I had to fabricate a mounting plate so the existing front panel hole could be utilized.

Now the transmitter puts out 10 watts (plus or minus). It is sensitive to the type of crystal used. For the contest I used a small surplus 3.547 MHz crystal installed in an old FT-243 case. It worked great. The transmitter uses a 6C4 oscillator and a 5763 power amp.

This rig looks a Novice station project, perhaps from an old ARRL publication; however, I have not found a schematic for it yet. The station does work well. It drives either phones or a small external speaker.



Go to [2009 page 6](#).

Select Menu

- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

Crystal Radios Of The 2006 Contest Entrants

Page 3

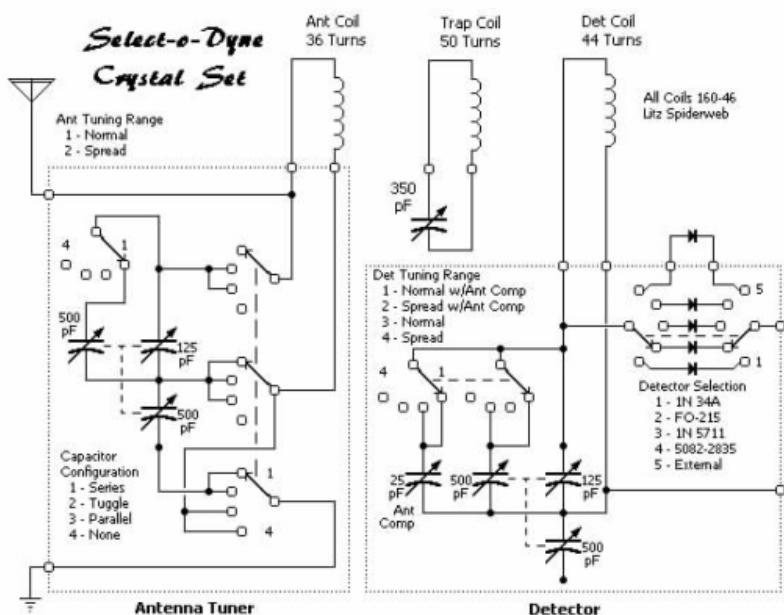
Steve Hewlett

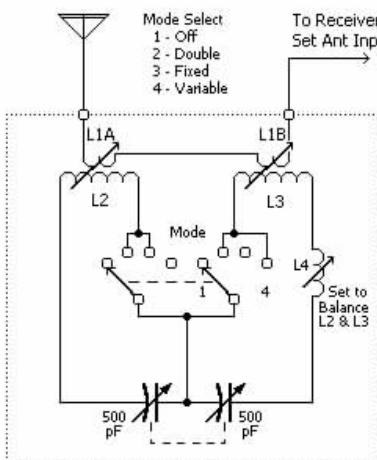


My 2006 contest set has three coils which slide on a polystyrene tube. From left to right they are wave trap, antenna coil, detector coil. All three coils are space wound (one wire width spacing between turns) copper wire; #24 ga. for wave trap and detector coils and # 23 ga. for the antenna coil.

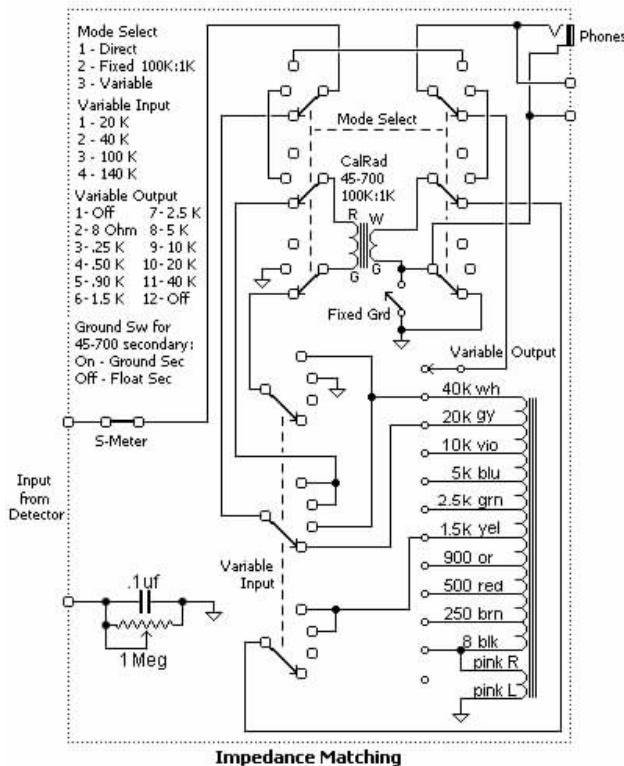
A Single Jackson 365 pF VC is used on the wave trap coil and a single Jackson 410 pF VC is used on the detector coil. A dual Jackson 410 pF VC is used on the antenna coil in a Tuggle arrangement. The diode is a FO-215. A Calrad transformer and a "benny" (are included).

Tim Kilboy

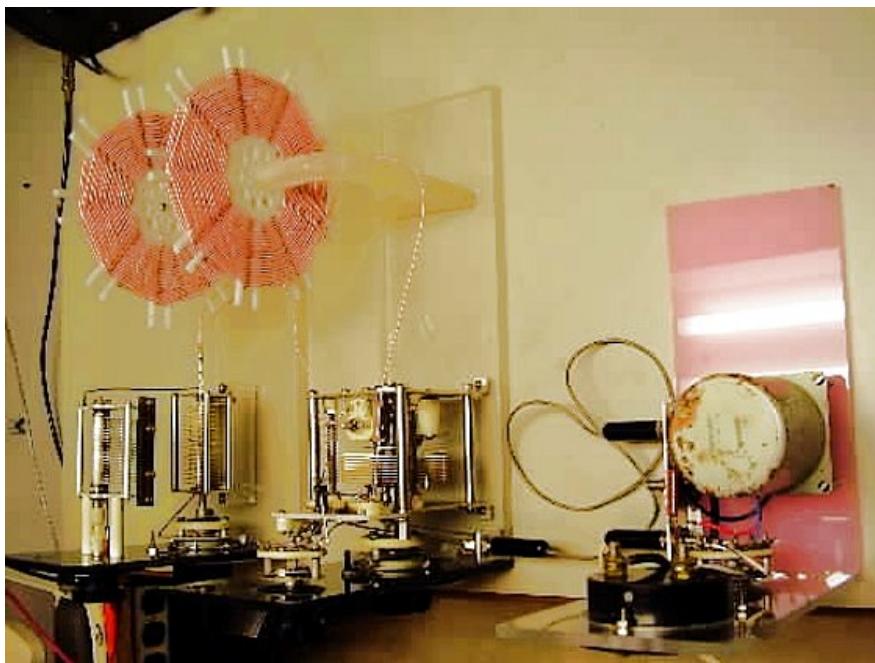




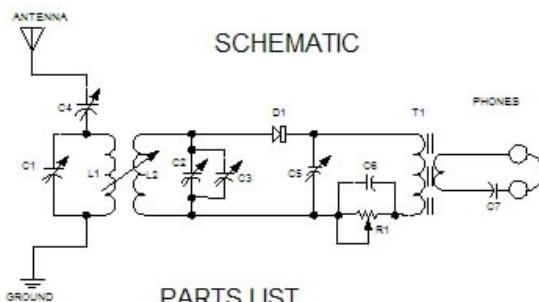
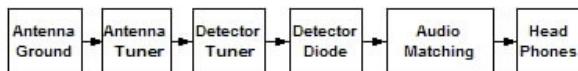
L1A - 1/2 of 20 turn Binocular Coil
L1B - 1/2 of 20 turn Binocular Coil
L2 - .52 T on 3/8"x2" Ferrite Rod
L3 - .48 T on 3/8"x2" Ferrite Rod
L4 - 2-20 uH Ferrite Slug Variable Ind



Wayne Thelen



BLOCK DIAGRAM

**PARTS LIST**

C1 - 435 pF Variable Capacitor with vernier drive
 C2 - 508 pF Variable Capacitor with vernier drive
 C3 - 0 - 50 pF Variable Capacitor, (trimmer)
 C4 - 450 pF Variable Capacitor
 C5 - 3 - 45 pF Variable Capacitor, (trimmer)
 C6 - 0.1 μ F capacitor
 C7 - 0.47 μ F capacitor
 D1 - 1N34A Germanium diode
 R1 - 500 K-Ohm pot
 L1 - 36 1/2 TURNS 660/46 Litz wire on 9 pt spider web coil form; L = 160.3 μ H; 5.70" O.D.
 L2 - 37 1/2 TURNS 660/46 Litz wire on 9 pt spider web coil form; L = 171.1 μ H; 5.85" O.D.
 T1 - VINTAGE RCA Input Transformer - P=250 K Ohms CT ; S=600 to 200 Ohms
 Phones - (2) U. S. Instruments UA1614 "Sound Powered" UA1614

Full details can be seen at [Wayne's Website](#)

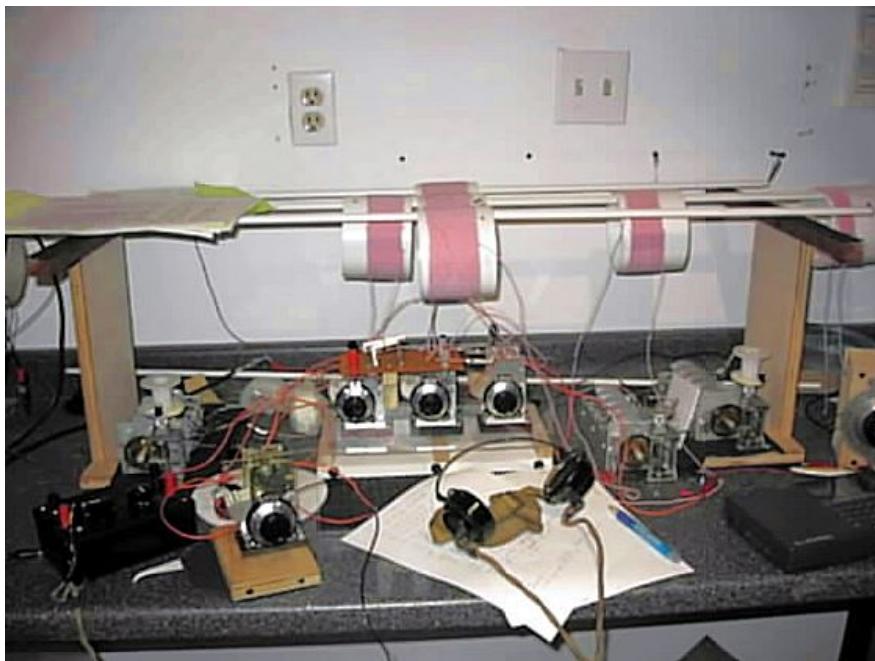
Jack Bryant

I used the same set in the BCB Open Class Category for 2004, 2005, and 2006. I tried the Hobbydyne in my toroid set, but my set worked better without it...too much signal loss. The selectivity of the set was already pretty good.

I did use an outboard cap this year in series with the set's built-in dual section cap. I liked it so much that I will probably modify my set and put the cap inside. Part of the reason for this is that my antennas are large with a lot of capacitance to ground. The standalone antenna cap adds a lot of flexibility.

Another mod to the set was a neon bulb connected from antenna to ground. This year we had some pretty good thunderstorms during the first part of the contest. When the bulb lit the room up, well, it was time to shut down! (I exaggerated just a little bit here.)

I did encounter a problem that I will mention, and perhaps you can avoid it. I wear glasses, and the constant pressure of my headphones against the ear piece of the glasses gave me a terrific headache. I apparently injured a nerve since it took me several weeks to recover. I am wondering if it is time for laser surgery so I can eliminate those glasses. You notice I didn't say stop using headphones...

Gil Stacy

Set: Same set as last year. Headset: RCA Big Cans tuned> and recharged by Steve Bringhurst.

Antennas: 88' top loaded vertical up 50' and 180' inverted "U" up 50'. Ground is the post 2004 DX DX contest ground described at the bottom of [this page](#) Set was the same as used in 2005. The antenna was a top loaded vertical cage antenna.

Lem Morrison

Set was the same as used in [2005](#). The antenna was a top loaded vertical cage antenna.

Alex Perez



Crystal Set DX 2006 Receiver

Despite the shortcomings that befell my design last year, the exact same setup is employed this year. The antenna spans a length of approximately eighty feet in a northeast to southwest orientation, rising to a height of forty five feet at the far end from the initial twelve feet. A convenient cold water pipe serves as a ground and is connected with a fifteen foot length of wire running horizontally. In order to minimize losses, an eight inch diameter twenty turn coil consisting of fourteen gauge wire is utilized and tuning is accomplished with a high quality vernier driven variable capacitor across the coil. A small ceramic trimmer loosely couples the antenna to the top of the tank circuit. Last year, the advantages of Schottky diodes were realized and a single BAT28 performs admirably in the design. A high impedance transformer matches the high impedance detector output to the low impedance DLR No. 5 headphones. These sound-powered headphones were most graciously provided as a prize by the contest committee two years ago and were instrumental in greatly boosting the DX capability of the receiver. A simple inductively coupled trap must be in place at all times. At night, it opens up a few hundred kilohertz around WXEM while during the day, it enables the reception of weaker stations across the band.

Band conditions seemed different this year but proved to be advantageous. After considerable experience gained during the preceding contest and an overall greater familiarity with band conditions, I promptly logged the majority of the typical nighttime band markers. The ensuing evenings resulted in only a few new nocturnal DX catches. Regrettably, I should have exploited the terrific grayline conditions to a greater extent this year. Nonetheless, many stations and points were gained due to a more casual approach to grayline DXing. Typically DX within fifty kilohertz of WXEM is impossible, even at night. Nonetheless, stations were logged on 1410, 1500, and even WXEM's own frequency of 1460 when it decided to completely shut down for a short while. Following in the pattern set by my previous participation, I did surpass my score considerable while greatly enjoying the Contest.

[Back to the main page.](#)


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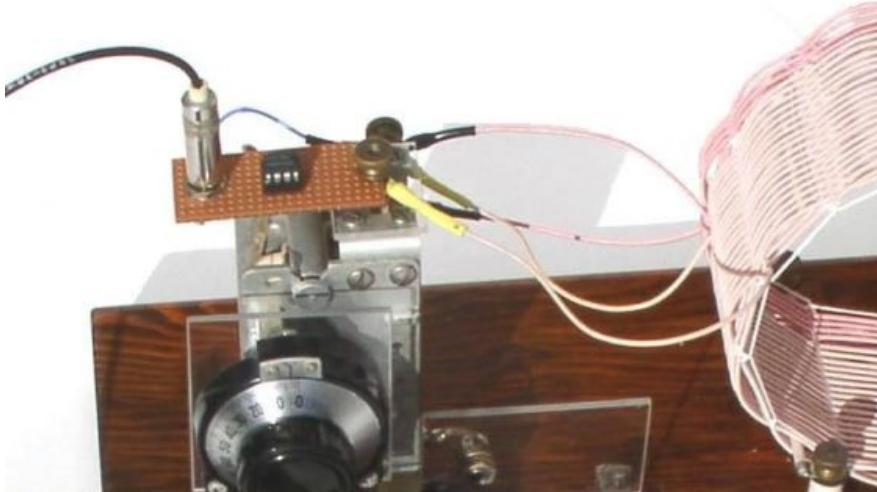
- [Home](#)
- [About Us](#)
- [Contest Results](#)
- [IAD Contests](#)
- [IAD Entries](#)
- [Antenna Matching](#)
- [Antennas](#)
- [BHAM Radios](#)
- [Crystal Contests](#)
- [Crystal Radio Entries](#)

- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

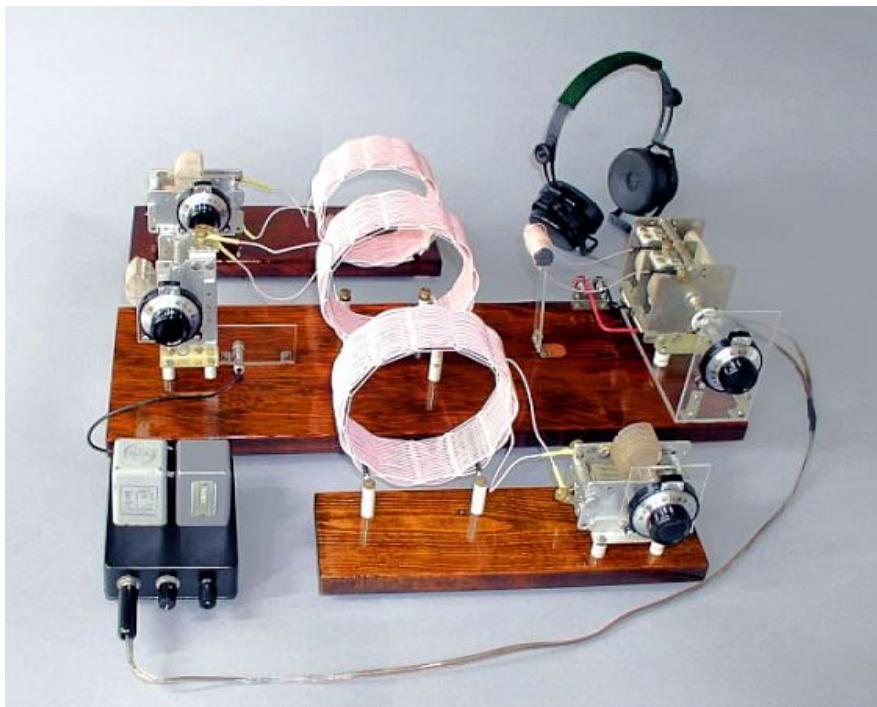
Crystal Radios Of The 2007 Contest Entrants

Page 1

Mike Tuggle



This detail shot shows the original Lyonodyne C2 and L2. The entire set can be seen below.

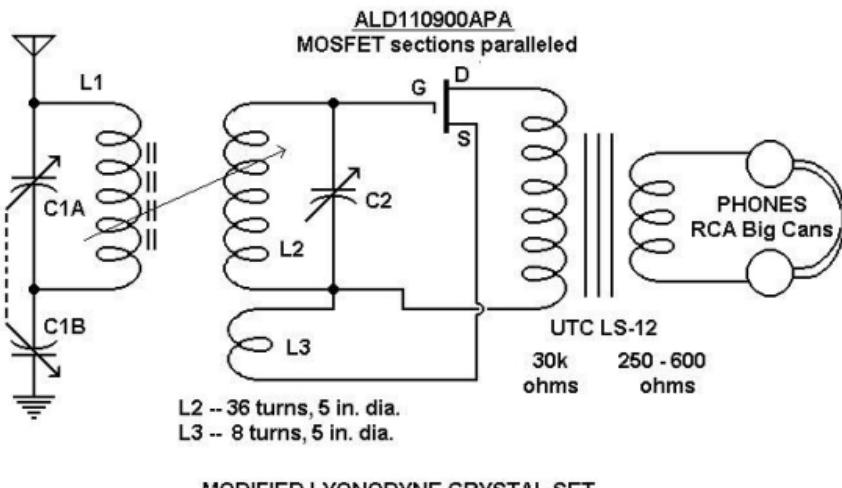


The MOSFET detector is mounted on its own circuit board along with its output jack. This board mounts to the set using the thumb nuts that attach L2 to C2. L3, a darker shade of pink, is mounted in back ('cold' end) of L2. The original diode output at bottom-center was not used.

To me, the most impressive feature of the ALD MOSFET detector was its superb selectivity. This makes sense, since the GATE presents essentially a zero load to the tuning tank, thus preserving its Q.

Volume, especially on weaker stations, was noticeably less than that delivered by the single diode detector. This may be partly due to the less-than-ideal matching between DRAIN-SOURCE and the audio matching and output circuits. Didn't have much time to play around with matching before the contest started.

Many thanks to my 'Benefactor' who provided the much-needed ALD110900A's during our recent national shortage.



For my 2007 XSDX set I adapted one of the popular ALD110900A zero-voltage-threshold MOSFET detectors to the Lyonodyne. The highest voltage, at the top of the secondary tank, is applied to the MOSFET GATE. An added-on 8-turn coil L3, closely coupled to the 36-turn secondary coil, feeds the DRAIN-SOURCE and audio load.

Evan Haydon



Another fun Elmer Memorial Crystal Radio DX Contest is over. I used the same crystal radio that I used last year with only a couple of improvements. I bought some 420/46 litz wire for my coils. The Q of the coils used in the crystal radio is now 800 from 550 khz to 1200 khz. The Q then tapers down to 600 at 1700 khz. My six toroid traps are all wound with the same litz wire and have a Q of 400.

My antenna is the same as last year except that both ends are now up 40 feet. I am now using a good set of Big Cans for headphones with a bogen T725 transformer for matching to the radio.



I did my usual listening to the broadcast band almost every evening and some mornings from the middle of September up to contest time. I made a lot of notes. These paid off in time saved finding and identifying the largest number of stations possible during the contest. It is amazing how fast some stations appear and fade away at the gray line. One has to be on the right frequency at the right time to catch them.

The band conditions here were very good the first day of the contest. The second day was really pretty good too. After that, the conditions were generally poor with some spotty openings. Here are some of my statistics for the contest.

Day	Hours spent	Stations found
1-12	15.5	166
1-13	9	34
1-14	11	23
1-15	12	19
1-16	11	19
1-17	6	8
1-18	7	8
1-19	6	3
1-20	5	5
1-21	8.5	4
91 hours		289 stations

Some of the stations heard during the contest:

WWRV 530 khz South Caicos Islands 1987 miles
 CMQ 670 khz Cuba 1483 miles
 CM 530 khz Cuba 1481 miles
 CKWX 1140 khz Vancouver, BC. Canada 1400 miles
 KNBR 680 khz San Francisco, CA. 1379 miles
 WBZ 1030 khz Boston, MA. 1333 miles

My personal choice for best catch during the contest:
 KGBC 1540 khz Galveston, TX. 250 watts 804 miles
 Good copy for an hour on the evening of Jan 19.

On an average winter day I can always hear about 55 stations. Most are within 175 miles. One everyday station heard is 5 kw at 247 miles. My all time list of stations heard on my crystal radio that ID in English is now 412 stations. Let's do it again next year.



Bob Jewell



ANTENNAS:

- 1.Long Wire approx. 200 ft long, up 80 ft, lead-in approx. 100 ft, all one-piece litz to rig.
- 2.Four element 20M colinear antenna, fed with 300-ohm feeder, used as three antennas. Up 85 ft.
- 3.Misc. Spotter small antennas.

ANTENNA TUNER:

Seven inch diameter, 6.5 inches long, ceramic form, space wound, 90 turns, bare silver plated wire, selectable on each turn.

Capacitor: 4 section, 570 pf each, Variable, ceramic insulated silver plates. Wired series and parallel.

RIG:

- 1.Antenna coil: Large (?) litz on 4.5 inch diameter opaque plastic pipe form, close wound. Detector: 185/46 litz on 3.5 inch diameter ceramic form, space wound. Q ~ 650. (HP-4342A)

2.Grounds (2): house ground system, 200 gal LP tank underground, water filled. Connected with 50 ft of RG-8 coax, inner conductor and braid paralleled.

3.Diodes (22): different TYPES, on ceramic rotary switches, instantly selectable. Favorite soldered in.

4.Capacitors: ceramic insulated, silver-plated, approx. 550 pf.

5.AUDIO: Bogen T-725 plus 200K to 1000 ohm

45-703, miniature transformer.

6.HEADPHONES (3): USI, 1247-A, mike elements wired in series. (2) N.I.B. (Ebay, no name) soundpowered headphones, one set series, one set parallel wired.

7.All traps, (3), ceramic insulated caps and litz coils.

8.“Toggle” type circuit.

9.“S” meter: Olson TE-380 meter, 0-8.7 ua,

Heath: 0-200 ua, series connected.

10.All internal RF wiring 185/46 litz.

11.ALL components mounted on Plexiglas sheets.

12.Many “Classic” vernier dials.

ACCESSORIES:

1.Icom R-70, spotter

2.Chrysler van auto radio, spotter

3.Icom PCR 100 with PCR 1000 software, spotter.

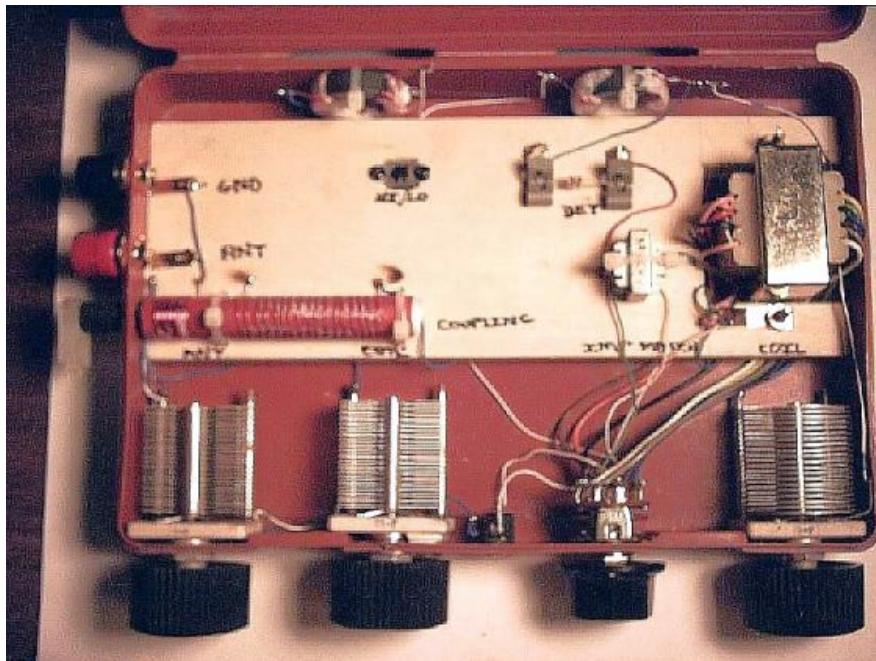
4.B&K Signal Generator, E200-D, frequency verification.

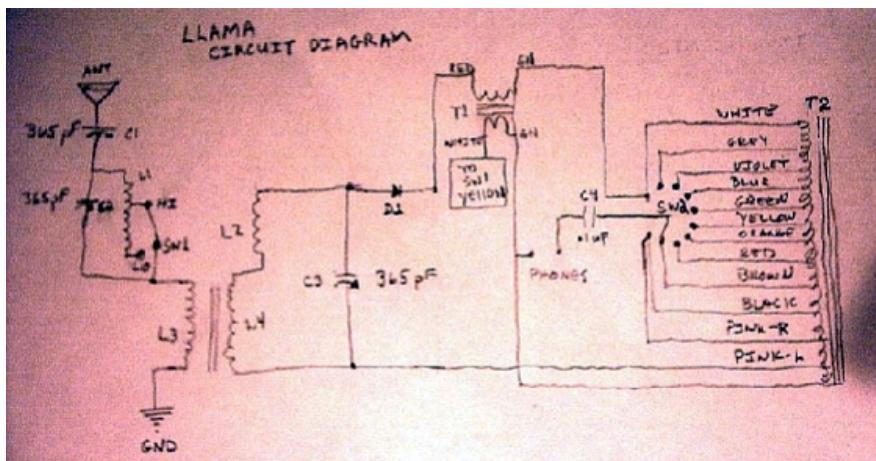
5.B&K, 1851, Frequency counter , frequency verification.

6.H.P., 4342A, Q meter. (max Q ~ 1000).

7.Heathkit, QM-1, Q meter. (max Q ~ 500).

Charles Pullen (Chuckster)

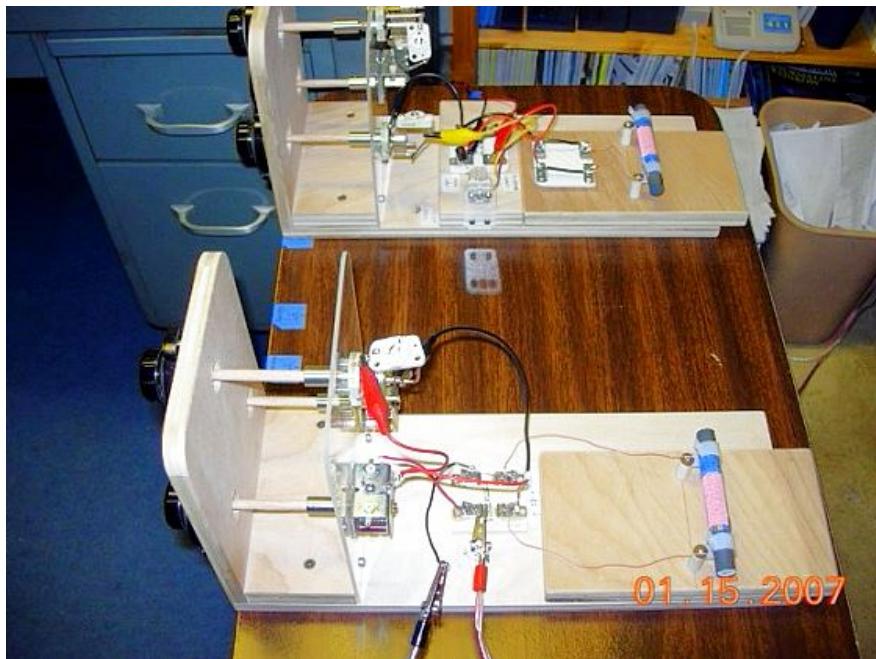




This circuit is a hybrid of Steve Bringhurst's select to match circuit and Dave Schmarder's toroid set #45. The design goal for this radio was high performance in a small package. The case is 9 inches x 6 inches deep x 1 3/4 inches tall. The toroids are FT 114A-61 amidon cores, L1 tapped at 12 turns. The toroid coupling coils are wound on a small tube with an ID slightly larger than 3/8 inch. The first coil is close wound, 15 turns. The second coil is triple spaced, seventeen turns. Both coils 24 awg and are approximately 29 uH with coupling accomplished by moving a 3/8" x 4" ferrite rod in and out of the coupling coil's tube. The detector used was a pair of HP 5082-2835 schottky diodes. The phones used was a pair of Philmore xtal earplugs in parallel thru a radio shack mono Y adaptor. The antenna used is a half sized g5rv ham antenna approximately 25 ft up, center conductor & braid of the coax connected together. Ground system is 3 four foot copper clad steel rods 8 ft apart connected with #14 awg solid bare copper wire.

The detector cap sometimes has a very slight but noticeable bit of hand capacitance at times, it seems to depend on the weather. All in all a good performing radio.

Dan McGillis





For the 2007 Crystal Set DX Contest, I used an all ferrite-rod double tuned set-up: Detector - ATU - Wave Trap.

The inductors are Amidon Ferrite 61 0.5"x4" ferrite rods with 165/46 Litz coils wound directly onto the rods. All capacitors have ceramic insulators. Detector tuning is split into 3 ranges to cover the broadcast band. Each range has it's own capacitor, trimmer and 8:1 vernier dial. The "Toggle tuned" ATU is split into two ranges - each with its own capacitors and 8:1 dials. The inductively coupled wave trap has one range and a 48:1 vernier. A FO-215 diode is Hobbydyne coupled to the top of the detector coil - no taps. Diode output goes to a Bogen T-725 transformer then to two USI UA-1614 sound powered elements in series - or - standard telephone handsets in series.

The antenna is an end-fed 200' inverted Vee with it's apex at about 40'; ground is a 4' pipe driven into the ground.

Dial number-to-frequency calibration curves for the detector and ATU were converted to vernier dial numbers for every 10 khz of the broadcast band. A station heard on a digital read-out Yaesu FT-757GX spotting radio could be quickly converted to crystal-set dial numbers - and vice-versa.

I think the bandspreading and calibration expansion are the best features of this set-up.

Dave Schmarder



- [Contest Results](#)

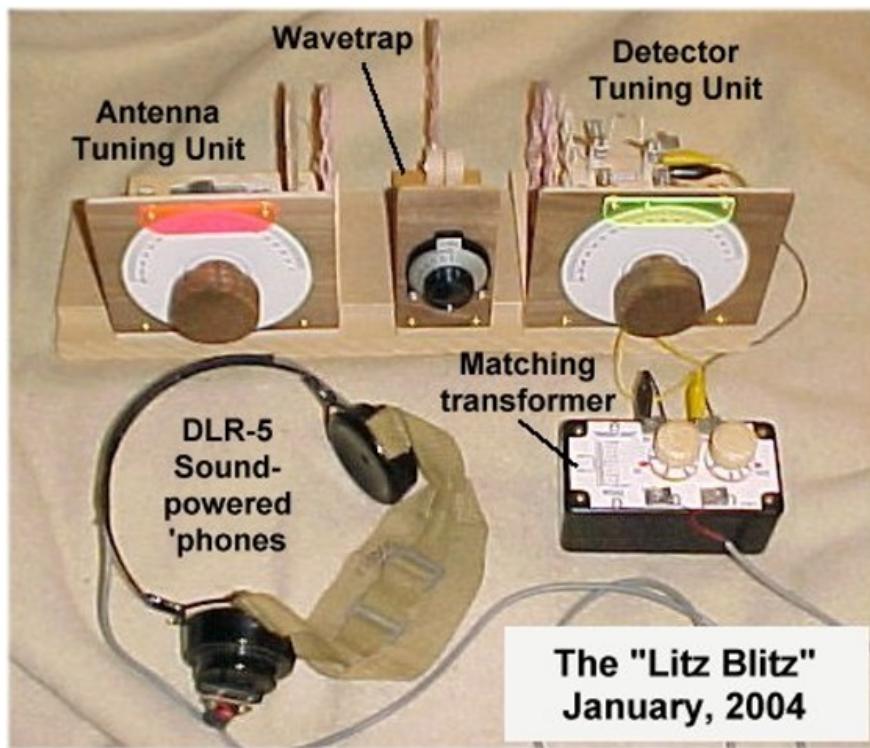
- [2004](#)
- [2005](#)
- [2006](#)
- [2007](#)
- [2008](#)
- [2009](#)
- [2010](#)
- [2006 Sprint](#)
- [2008 Sprint](#)
- [2009 Sprint](#)

- [Previous](#)
- [Next](#)

Crystal Radios Of The 2004 Contest Entrants

Page 2

Dan Petersen

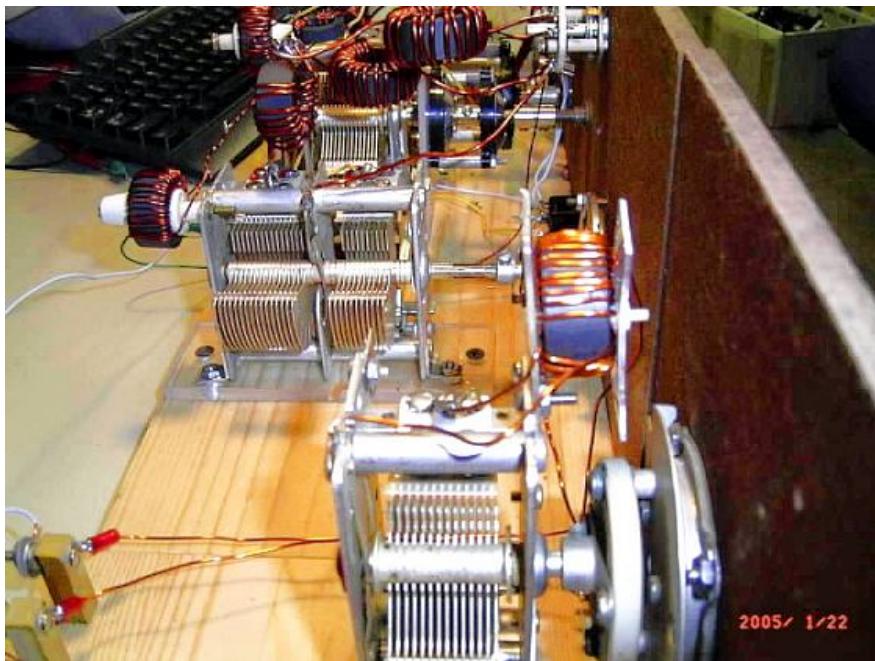


Here is a picture of Dan's set, the "Litz Blitz". This set is in the XSS Newsletter as an article in the March, 2004 issue.

Brian Wingard



Notice the FT114-61 cores and large diameter wire. Brian uses separate cores for Lo Band/Hi band.

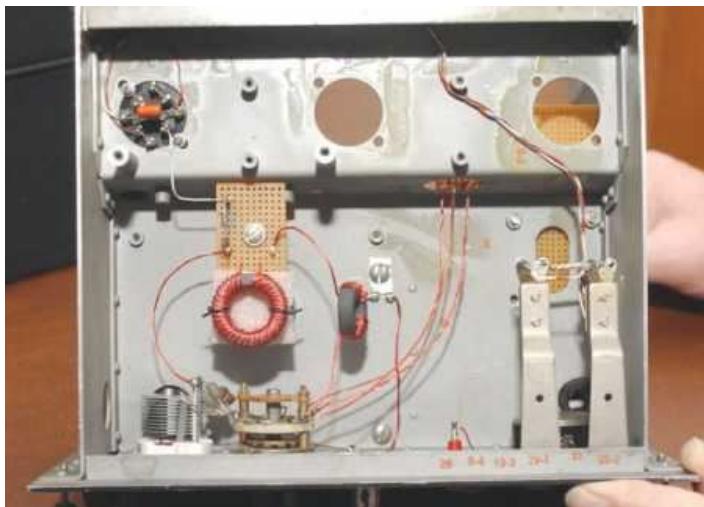




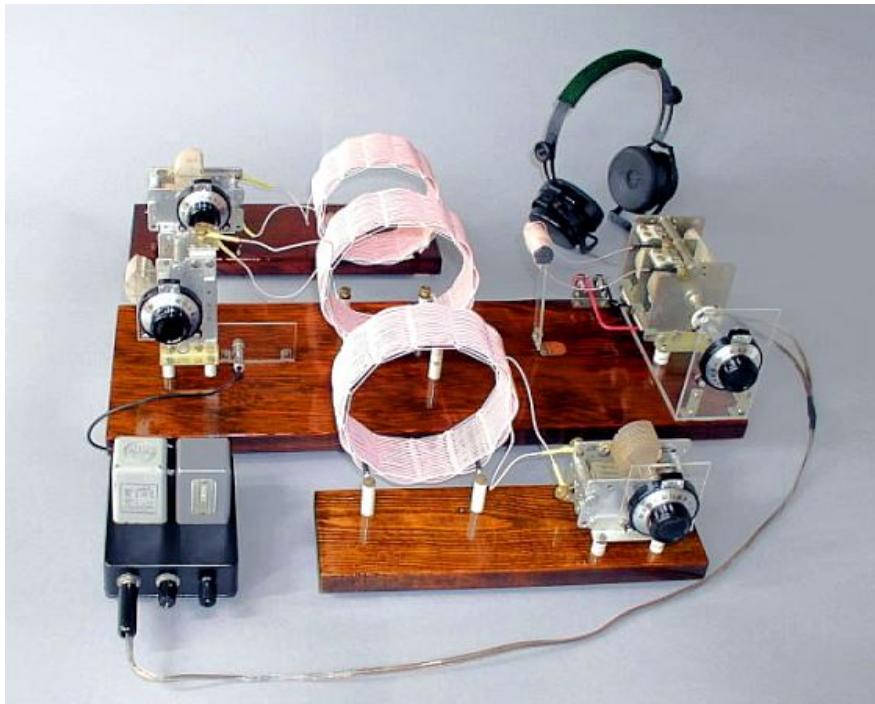
Steve Bringhurst



Steve uses a BC-221 as the basis for his BCB set. The BC-221 is a frequency meter, WWII vintage.



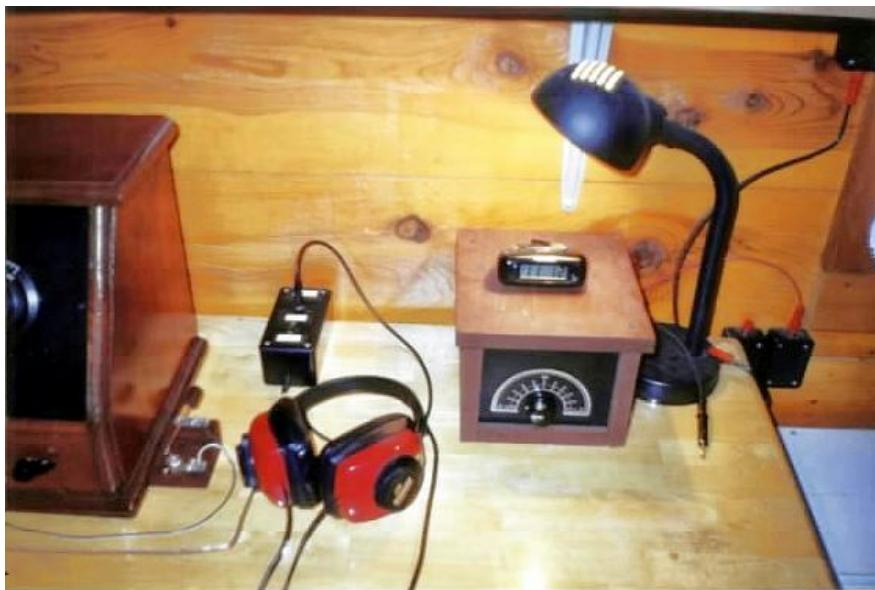
Mike Tuggle



Mike Tuggle's record smashing DX set.

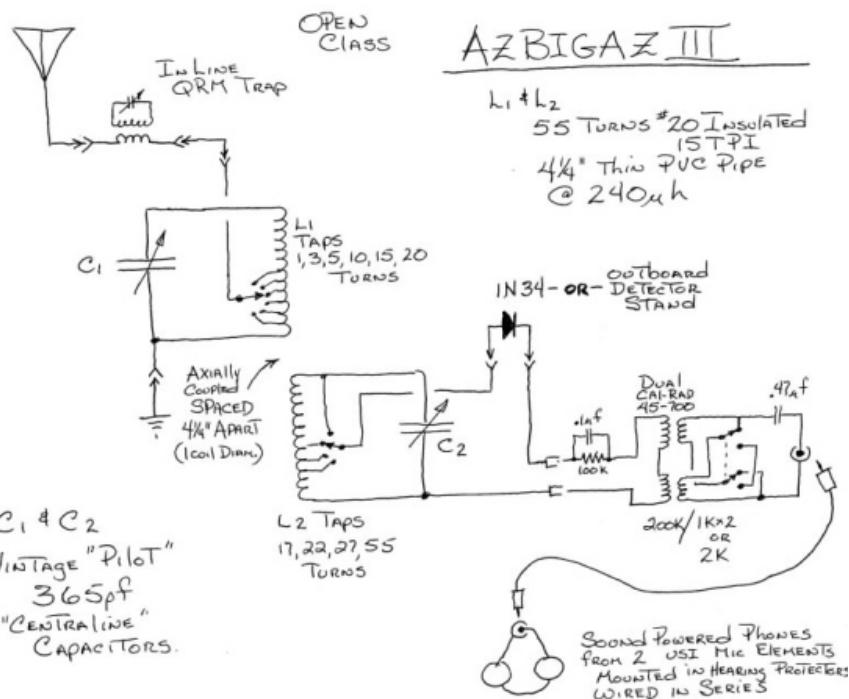
Mike Branson





The matching unit.





Jack Bryant



I started putting the set together on January 5, 2004...way late! I used a black plastic clipboard for the front and a clear orange plastic one for the chassis plate. 1"x3" small boards are used to hold up the chassis plate. I installed the coil supports during the contest and the phone jack afterward.

This set is a modified bandpass unit, but uses two separate coil assemblies. Each assembly consists of toroids wound on FT114-61A cores for the antenna and detector coils. Each assembly has its own coupling coil, connecting the antenna and detector circuits.

Here are the specs:

Lo Band

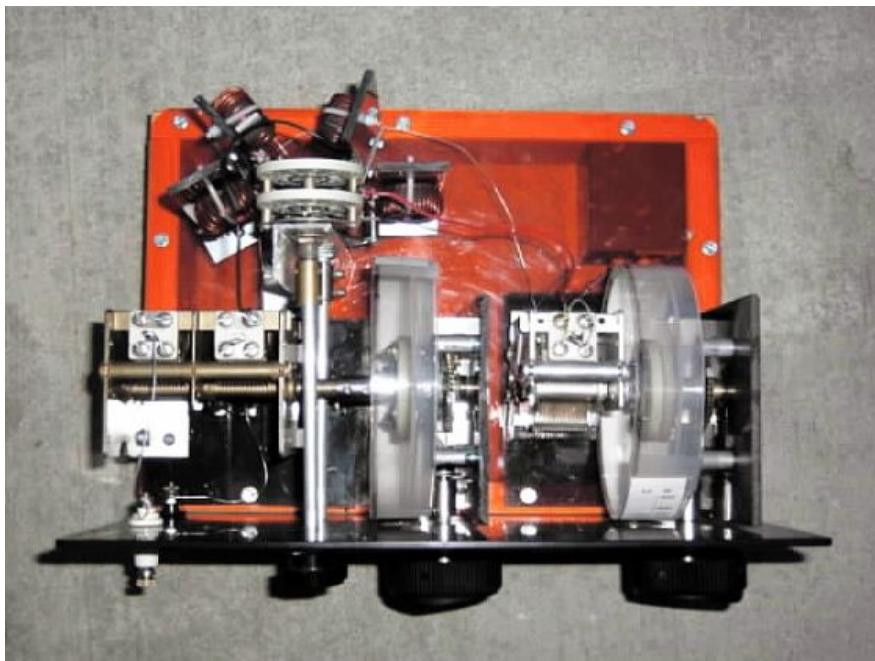
Antenna: FT114A-61, 33T #18

Coupling Coil:FT-82-61, 10T ant side, 5T detector side, tapped every turn (det side only) Detector: FT114A-61, 40T #18

High Band

Antenna: FT114A-61, 22T #14 Coupling Coil:FT-82-61, 10T ant side, 5T detector side, tapped every turn (det side only) Detector: FT114A-61, 20T #14

The audio transformer is one of the Fair Radio 100k:100 ohm units. The headphones are Dynalec mic elements. I started with one of the ITT diodes, then settled on one with a blue stripe (characteristics unknown).



[Continued on Page 3.](#)

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- [Antennas](#)
- [BHAM Radios](#)
- [Crystal Contests](#)
- [Crystal Radio Entries](#)
- [Sprint Contest](#)
- [Headphones](#)
- [Projects, Mods](#)
- [Favorite Links](#)
- [Contact Jack](#)

Sub Pages

- [Main Page](#)
- [2004 Page 1](#)
- [2004 Page 2](#)
- [2004 Page 3](#)
- [2005 Page 1](#)
- [2005 Page 2](#)
- [2006 Page 1](#)
- [2006 Page 2](#)
- [2006 Page 3](#)
- [2007 Page 1](#)
- [2007 Page 2](#)

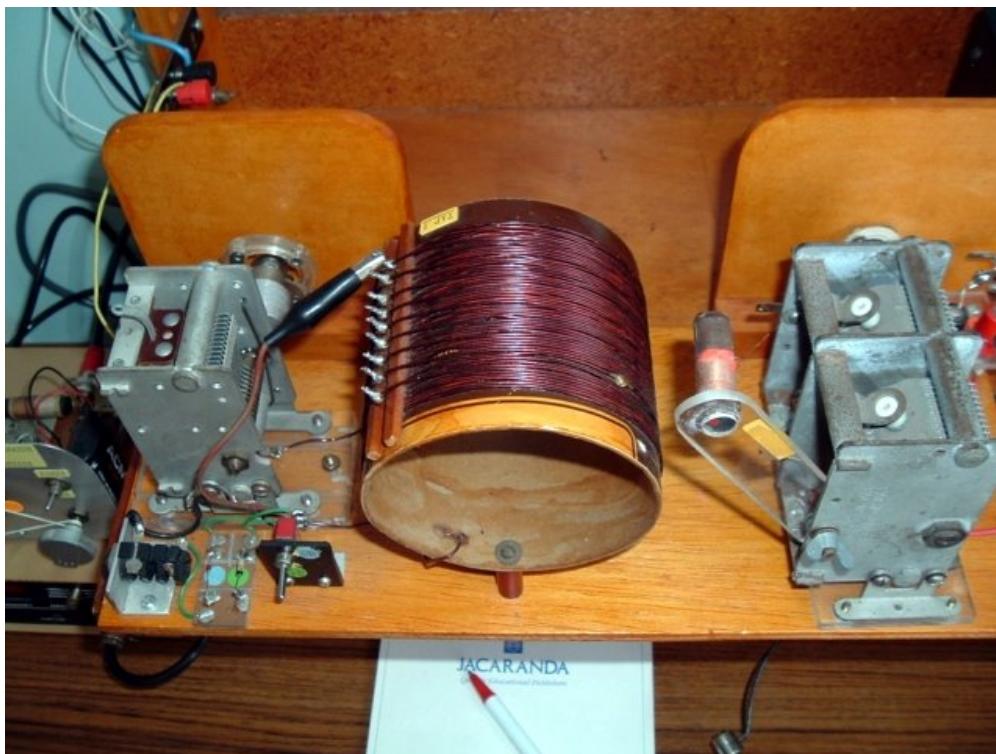
- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

Crystal Radios Of The 2009 Contest Entrants

Page 2

Ron Everingham, Open Class Entry







This double tuned radio is really my first attempt for DX listening by virtue of using two vernier dials, variable coupling and audio matching.

L1 is wound on a piece of ferrite rod connected to a swinging arm to obtain variable coupling for L2. The S meter is a surplus 30uA movement which gives a good indication for setting the tuning capacitors to a particular frequency when a signal generator is loosely coupled to the aerial.

The aerial used is about 20 feet high and 80 feet long bent to fit into my small lot.

Dave Schmarder, Loop Class Entry



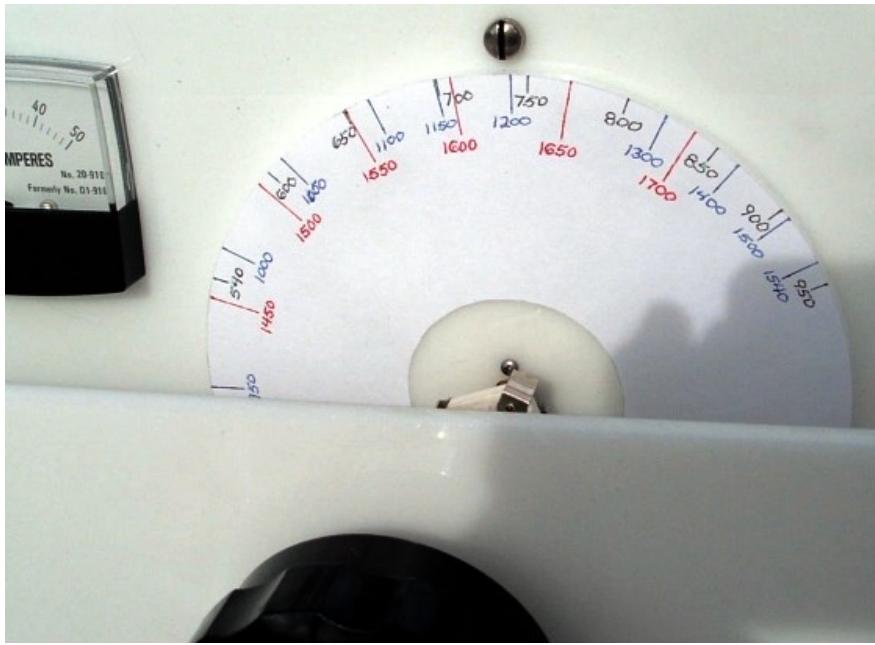
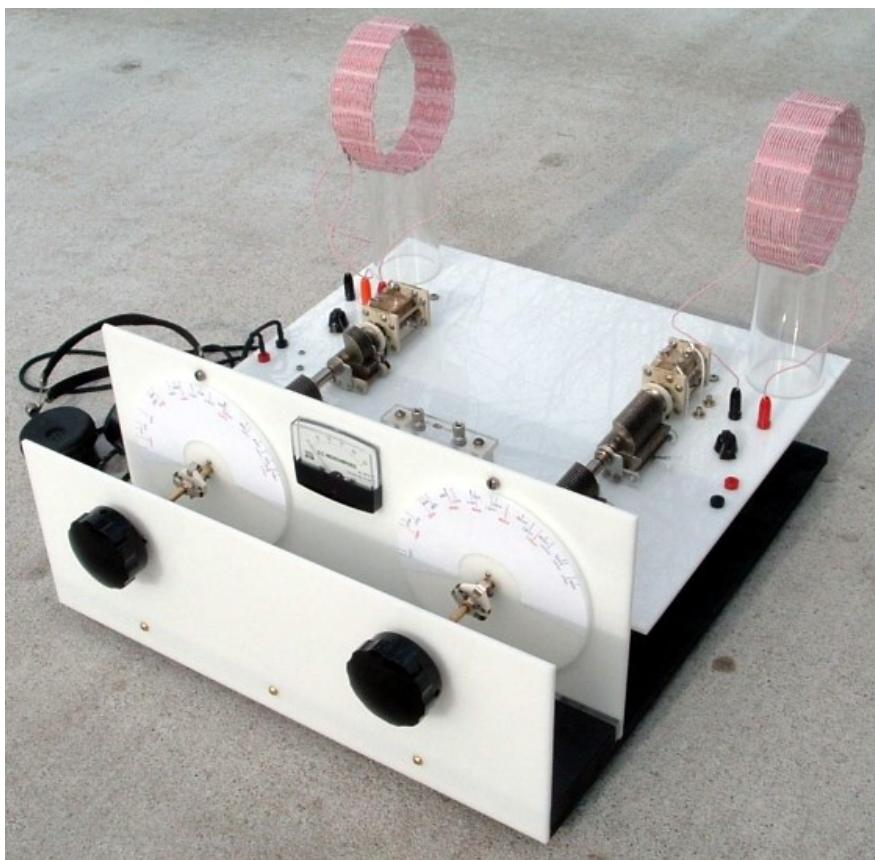
To see Dave's log and contest set description [click here](#). This will take you to his fine website. Here is his [loop antenna description](#).

Jack Hennon, Open Class Entry



Jack used the venerable Miller 565 with an external audio matching unit. Notice the very rare 10 ua meter in his audio unit!

Evan Haydon, Open Class Entry



I spent a lot of time preparing for the 2009 contest. I spent many hours most evenings for the last three months listening to the broadcast band. From both notes made then and from memory, I am very familiar with what stations appear at what time of the day at this location. I watch band conditions carefully and fairly accurately know which stations it is even possible to hear at any time on any frequency.

My crystal radio will at night hear any signal that my spotter radio will hear except for weak signals 10kc either side of my 3 local stations. My crystal radio will hear 95% of the daytime signals that my spotter radio will hear. On a good cold winter day, I have received 57 stations. My radio, traps, and antenna system are exactly the same as used in the 2008 contest. I could not find any way to improve the system.

This year's contest had unusual conditions here. The first day had very good receiving conditions. The second day had good conditions. The band then stagnated. It did not change for the rest of the contest. The stagnant condition was not what I would call a normal winter condition either. There was no flux or change (due to weather conditions) to cause stations to appear and disappear. For day after day it was the same old stations all up and down the band.

The contest was fun to work as always. My list of all time stations identified on the broadcast band now numbers 505 stations. I identified 66 stations this year that I did not hear in the 2008 contest. That means that I identified 36 stations in the 2008 contest that I did not hear this year. In the 2009 contest, I logged 4 stations from New York state, 1 from Boston, 3 from California, 2 from Philadelphia, and 25 stations from Canada. I identified stations from 31 different states, Canada, Mexico, and Cuba. IBOC probably cost me 3 or 4 stations to not be logged this year

Below is a summary of my activities during the 2009 crystal radio contest.

Stations			
Day	Logged	Time spent	
1-16	197	15	Hr 35 Min
1-17	32	12	Hr 20 Min
1-18	27	11	Hr 20 Min
1-19	21	11	Hr 10 Min
1-20	11	8	Hr 0 Min
1-21	9	7	Hr 20 Min
1-22	8	6	Hr 50 Min
1-23	8	8	Hr 15 Min
1-24	7	7	Hr 35 Min
1-25	8	10	Hr 20 Min

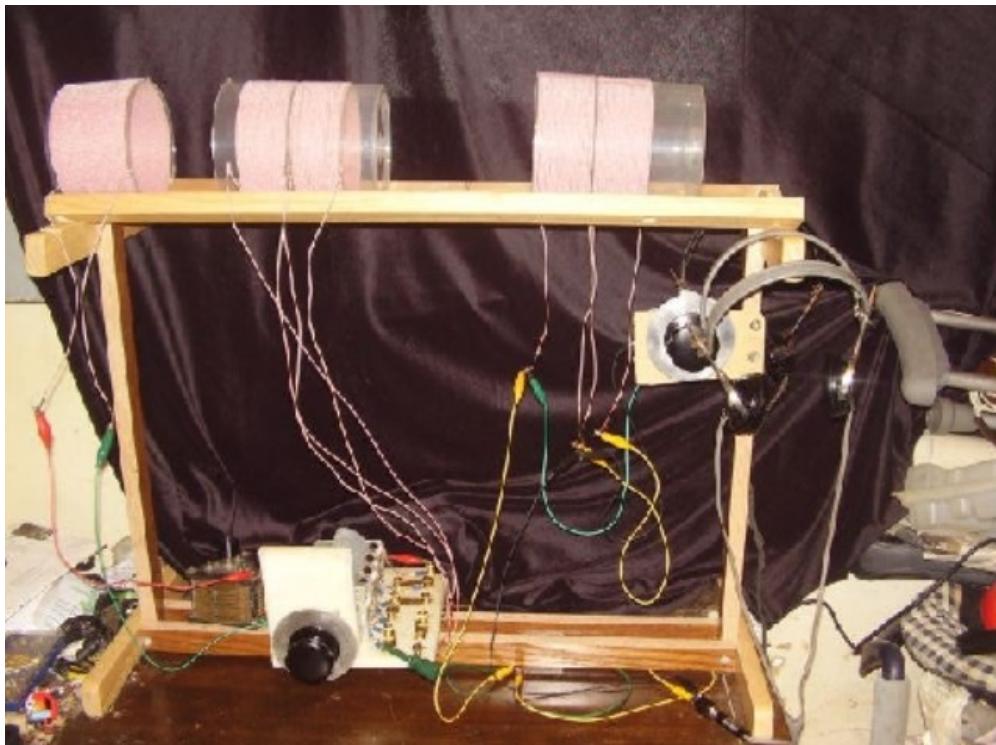
Total time spent - 98 hours 45 minutes

Total stations heard - 328

Total stations identified - 312

Total points - 583,312

Michael Bartolone, Open Class Entry



My current contest rig has contra wound solenoid coil 5.25 in diameter, each section 29 turns of "indoor antenna wire", 2.15in length per section, single gang 400pf air variable cap, unknown diode scavenged from a clock radio picked up at Goodwill (the diode has two red bands on one end and no other markings), Clevite brush phones.

Coils suspended in a slide cradle 20 inches above the desk. The tank is loose coupled to an ATU with contra wound solenoid coil 5.25in diameter, each section 26 turns switchable so I can use either single section, or both in series, or in parallel, with a 5 gang 380pf per gang cap switchable to put various gangs in series or parallel with the various coil configs.

One tunable trap with a single 5.25 in diameter coil, 43 turns, 3 in long with 440pf cap for tuning.

Note the 'indoor antenna wire' is like very cheap litz...35 strands individually insulated but only twisted, not braided like true litz. However, the price was too good to pass up (\$0.02 per foot when I bought it).

My antenna is a 75+ foot long wire (16ga speaker wire) average about 12 feet above ground, run from the eaves at one corner of the house to a tower about 35 feet from the house and then back to the other corner. The ground is a single copper clad rod about 3 feet long about 2 feet into

- [Contest Results](#)

- [2004](#)
- [2005](#)
- [2006](#)
- [2007](#)
- [2008](#)
- [2009](#)
- [2010](#)
- [2006 Sprint](#)
- [2008 Sprint](#)
- [2009 Sprint](#)

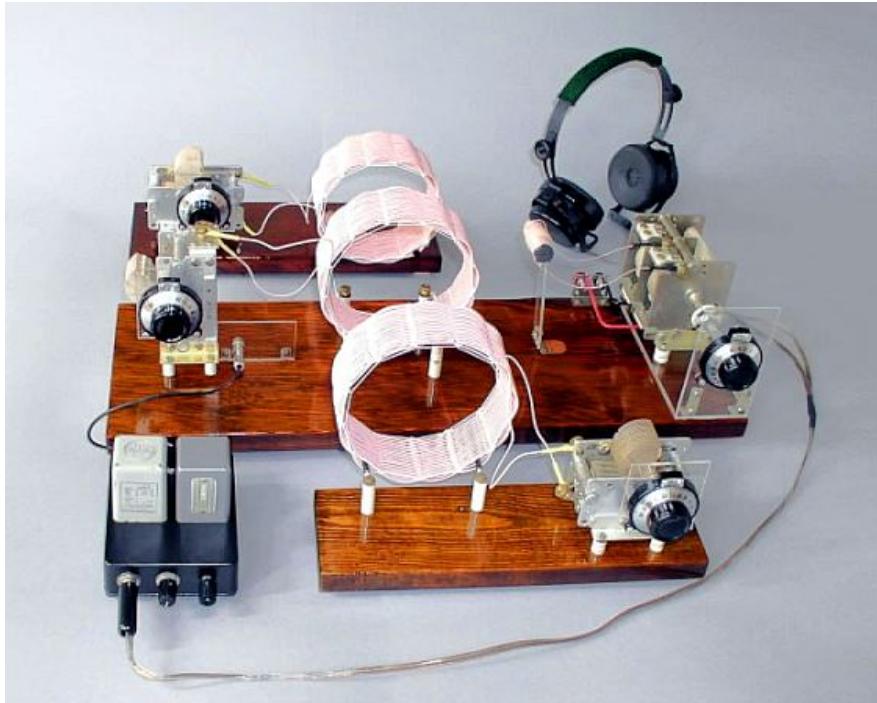
- [Previous](#)

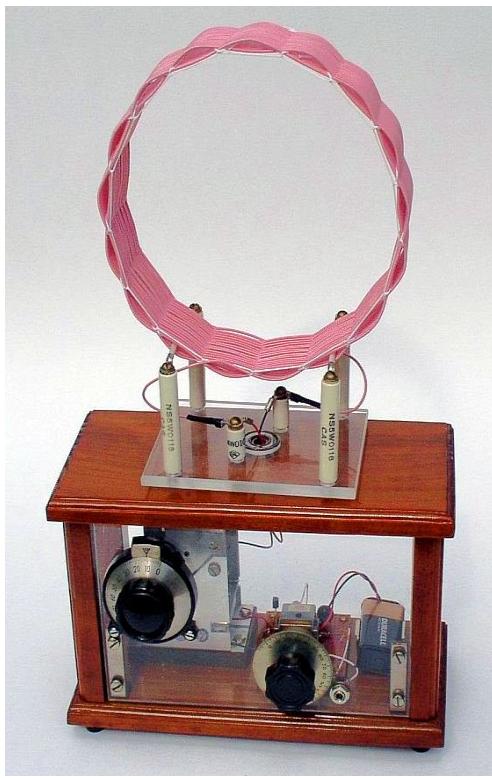
- [Next](#)

Radios Of The 2010 First Final Farewell DX Contest Contest Entrants

Page 1

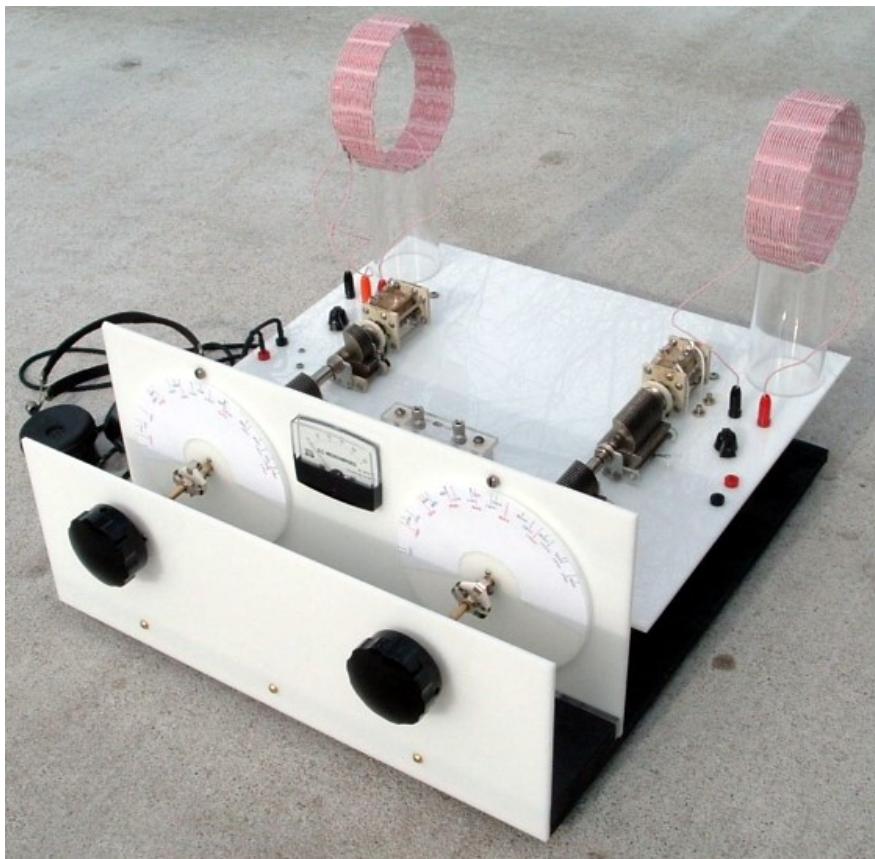
Mike Tuggle, Lyonodyne-17, Open Class Entry

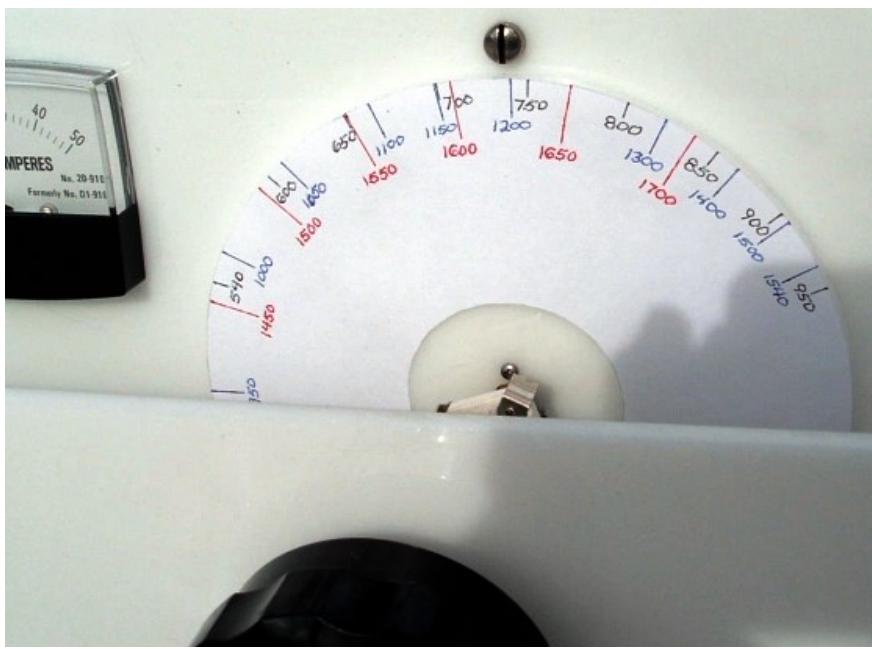




The Lyonodyne 17 was used in the crystal set category, the same set used last year. The Active Device set used in the contest is the Homodyne. Click [here](#) for the info on the radio, as used in the 2007 Active Device Contest..

Evan Haydon, Open Class Entry





This year's crystal radio contest was fun, even though it was long. The broadcast band conditions in Lincoln were what I would call normal or generally good. I used the same crystal radio and antenna setup that I used in the 2009 contest.

23 radio stations that I identified in the 2009 contest were not heard in the 2010 contest. I identified 24 new stations in the 2010 contest to add to my all time heard list. That list now stands at 536 stations identified. For that number, I only count US and Canadian stations.

In the 2010 contest I heard stations in 33 states from California to New York. I identified 30 Canadian stations, 7 Cuban stations, and 2 Mexican stations. The most stations identified on one frequency was 9 stations on 1190 kHz.

Number of stations per week: (Jan 15 to Mar 15, 2010)

Week 1 - 244
 Week 2 - 42
 Week 3 - 33
 Week 4 - 21
 Week 5 - 16
 Week 6 - 17
 Week 7 - 15
 Week 8 - 6

Total of 394 broadcast band stations identified

Total points: 793,421

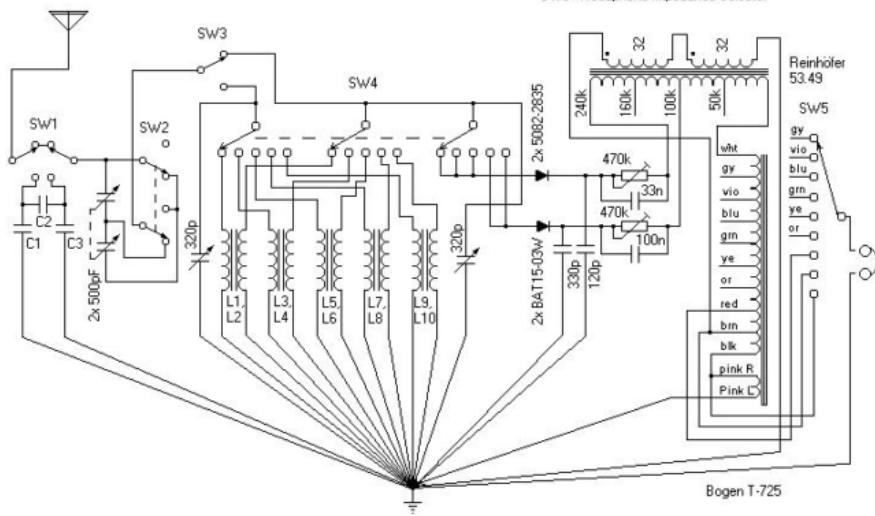
Ralf Siemieniec, Open Class and Below BCB Class Entries

Receiver Used For Long Wave Reception



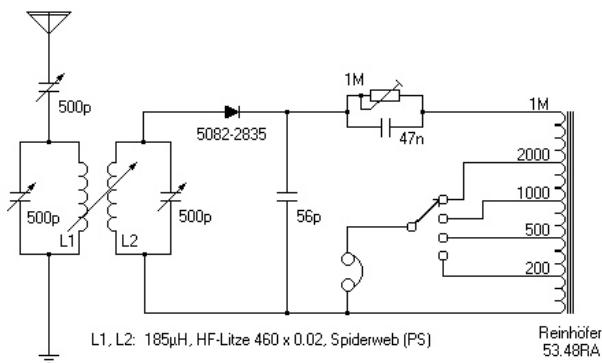
L1, L2: 2x 3700 μ H, Core P18-11 [M33], RF-Litz 80x0.02
 L3, L4: 2x 310 μ H, Core P18-11 [M33], RF-Litz 80x0.02 (2x)
 L5, L6: 2x 90 μ H, Core P18-11 [M33], RF-Litz 460x0.02 (2x)
 L7, L8: 2x 7 μ H, Core RM5 [K1], RF-Litz 80x0.02 (2x)
 L9,L10: 2x 0.8 μ H, Core RM5 [K1], AgCu-Litz AWG24

SW1 - Antenna Volume/Selectivity Selector
 SW2 - Antenna Matching Switch
 SW3 - Single- / Dual-Tune Switch
 SW4 - Band Selector (LW / MW1 / MW2 / SW1 / SW2)
 SW5 - Headphone Impedance Selector



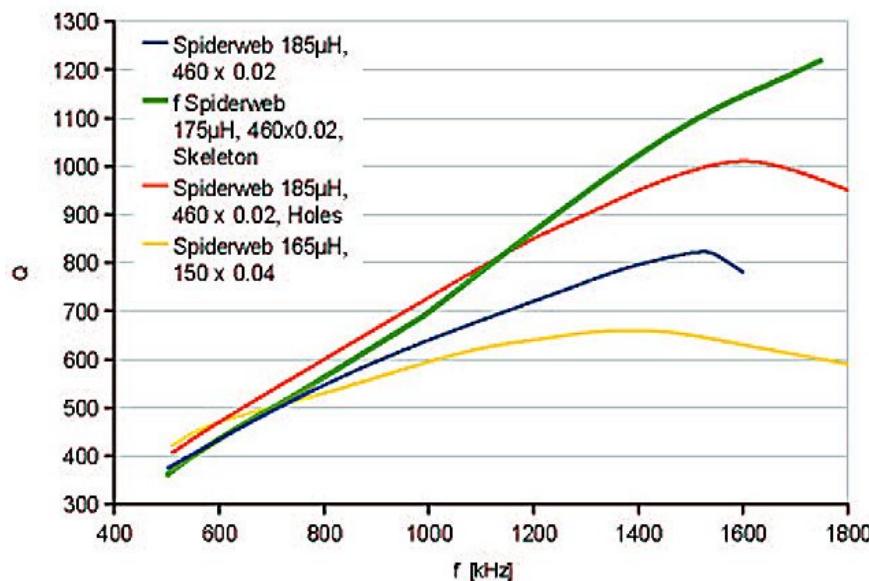
Long Wave Receiver Schematic

Open Class Crystal Set Entry



Crystal Set Schematic

Spiderweb Coil Q vs. Frequency



Here is a [map](#) showing the received stations.

- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

Crystal Radios Of The 2005 Contest Entrants

Page 2

Lem Morrison



N4AHJ 2005 CONTEST CRYSTAL RADIO and OTHER INFO

The picture shown is the set in the 2004 Contest configuration.

TRAPS:

(1) Tunable (1) - 2-section variable, sections in parallel, 240pF total; Rook coil with 18 gauge wire, 5.25 inches effective diameter, 47 turns; loose-coupled to the Detector coil.

(2) Tunable (2) (located in AMU) - both use 14 gauge enamel wire on FT-114A-61 cores and dual-section variables with both sections in parallel.

(3) Fixed (9) (located in AMU) - 14 gauge to 22 gauge enamel wire on FT-114A-61 cores, silver mica fixed capacitors, and plated ceramic trimmers (one trap for each of the local “blow torches”). Each link-coupled to the antenna feed to the set.

ANTENNA MATCHING UNIT (AMU):

One 4-section variable capacitor, four fixed capacitors (500pF, 1000pF, 2200pF, and 5000pF), and two coils (42 turns 14 gauge enamel on a FT-240-61 and 26 turns 16 gauge enamel on a FT-114A-61). All components switched to provide four matching arrangements: series LC, parallel LC, inductance only, and capacitance only. Both inductors are tapped to provide 23 L settings. An antenna switch is provided for switching between up to five antennas.

BANDPASS TUNER:

Capacitor - 520pF variable, 2 sections used in Toggle arrangement; vernier is a surplus right-angle unit with a 25:1 ratio.

Coil - Two Rook coils with 14 gauge enamel wire, 6.25 inches effective diameter, 15 turns each, 30 turns total; bandswitch provides either series or parallel coupling for Low band and High band tuning based on Ben Tongue’s approach; loose-coupled to the Detector coil.

DETECTOR TUNER:

Capacitor - 420pF variable with home-made vernier with a 32:1 ratio (vernier constructed from gears salvaged from a VCR and a TV tuner).

Coil - Two Rook coils with 14 gauge enamel wire, 6.25 inches effective diameter, 18 turns each, 36 turns total; bandswitch provides either series or parallel coupling to provide Low band and High band tuning based on Tongue's approach; impedance taps (High Band: 100%, 75%, 64%, 50%, and 28%; Low Band: 100%, 72%, 50%, 28%) on coils to provide matching to diodes.

Diodes - Two (one marked FO215 and one marked 3502) in parallel.

AUDIO:

Matching - Reproduction of Steve Bringhurst's Ulti-Match circuit.

Headphones - Two Automatic Electric GH-66919 elements (manufactured 1942) out of a military handset and a set of Steve Bringhurst's enhanced SP cans.

NOTES:

The basic set is similar to my 2004 contest set. The primary > differences: larger Rook coils with larger gauge wire, hotter diodes (thanks to Steve Bringhurst), 20 uA meter, and new front panels.

I determined optimum AMU settings across the AM BCB for each antenna prior to the contest. These settings were reasonably reproducible during the contest, even when it rained!

The capability to switch among three antennas was great, especially between vertical and horizontal polarization. A station that was uncopiable on one antenna usually would be louder on one of the others. Generally, I used the vertical the most, but I noticed on several occasions that I could hear a station on one of the slopers when I could not on the Tee.

By the way, I live on a city lot that is 85' wide and 165' deep. However, I am blessed with having very good relationships with my neighbors on both sides and with a wooded area directly behind my lot. After Hurricane Ivan destroyed all my antennas (three oak trees ranging from 50' to 80' tall fell!), both neighbors allowed me to re-erect the Slopers across their backyards. Also, the 90' leg of the Tee ran well into the woods behind my lot.



**ANTENNAS:**

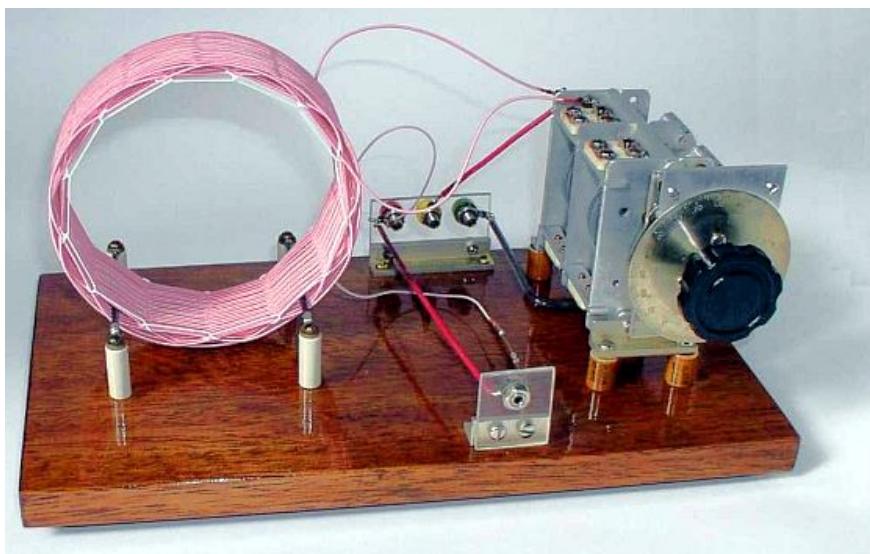
(1) Tee, 46' tall; top-loading legs consist of two parallel wires spaced 38" and run 90° to Southwest and 40° to Northeast. The vertical core consists of a cage of four parallel wires spaced 12" apart. To provide broader bandwidth I added two vertical wires from each of the top-loading legs (spaced 4' from core center), and one additional vertical wire on Southeast and Northwest sides (spaced 4' from core center). All of the vertical wires are connected at the base and series fed with a single wire.

(2) Sloper, 118' with far end at 50° and station end at 8°, oriented toward East-Northeast

(3) Sloper, 130' with far end at 50° and station end at 8°, oriented toward West-Northwest

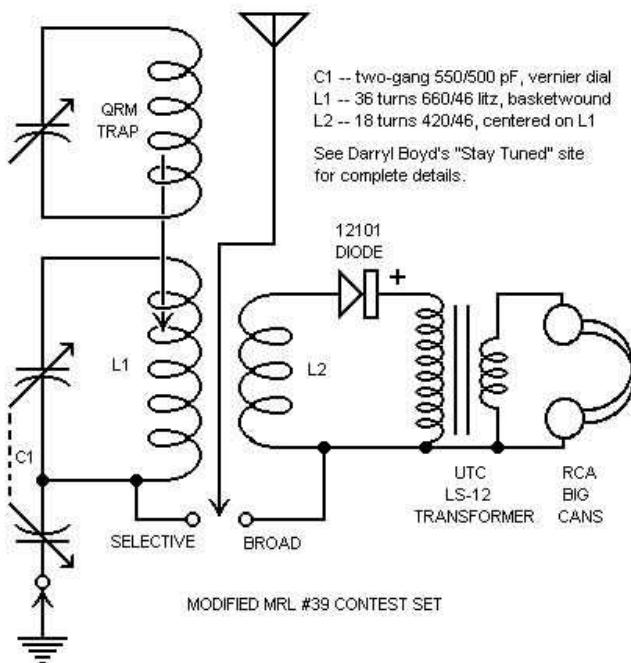
Ground system: Ham station ground - six ground rods interconnected and connected to shack with two quarter-inch copper straps; supplemented by one 8' ground rod directly under the Tee and 4-4' ground rods under the wires dropped from the top-loading legs, all inter-connected with copper wire; both ground systems connected with a run of copper braid (salvaged from old RG-8) over a #10 copper wire. Radials are 17-gauge aluminum electric fence wire; used 12 radials with lengths from 30' to 135' (one radial attached to the city water system!).

Mike Tuggle



As it turns out, all loggings were made in the 'BROAD' configuration.

The DX gods never really smiled this time, maybe an occasional smirk. Still, I guess I can't complain.



Philip Miller Tate (Ge_Whiz)



The radio is a loose-coupled set. The antenna coil is heavy solid copper wire, 16 turns on a two-and-a-half inch diameter ABS drain pipe, tapped every other turn. The aerial is coupled in via one stage of a dual 120 + 120pF variable capacitor; the other is in parallel with the coil. There is no earth connection – the set works better without it – but the earth level is hard-wired through to the detector coil. The aerial itself is a total of 120 feet of wire running from the end of the house, 50 feet to the shed roof and back at an angle of about 35 degrees to the opposite end of the house, average height 20 feet above ground. Note that there is no vertical section, as the radio is located on the top floor of the house.

The detector coil is eight turns of 660/46 Litz wire with an inductance of 5uH, wound on a five-point rook former of the same ABS pipe, in parallel with a 350pF variable capacitor with three-turn gearing. The combination tuning system covers approximately 4-15MHz. The detector is an AAZ18 germanium gold-bonded diode. Output is to a Select-to-Match transformer system and thence to a pair of DLR-5 military balanced-armature headphones.

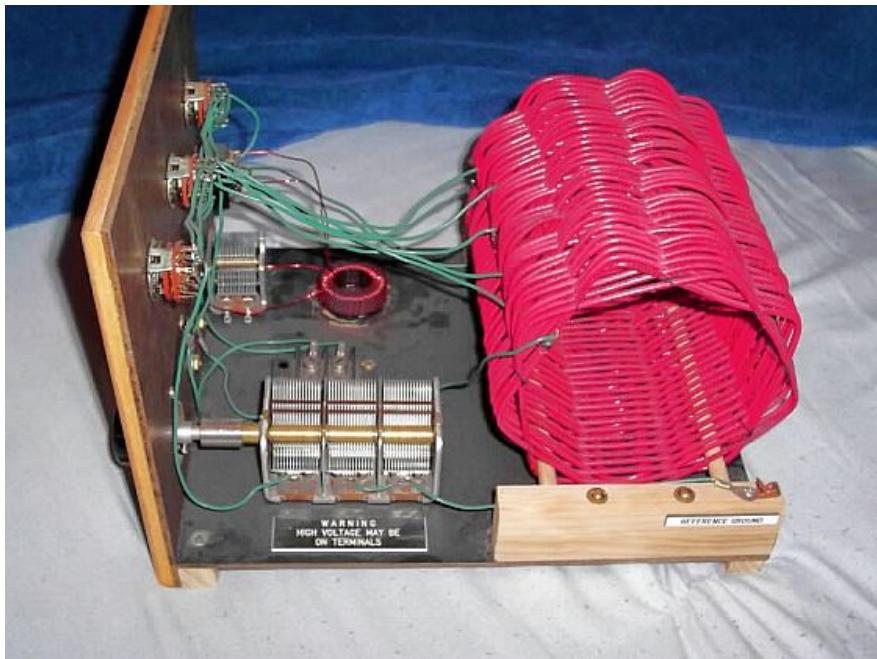
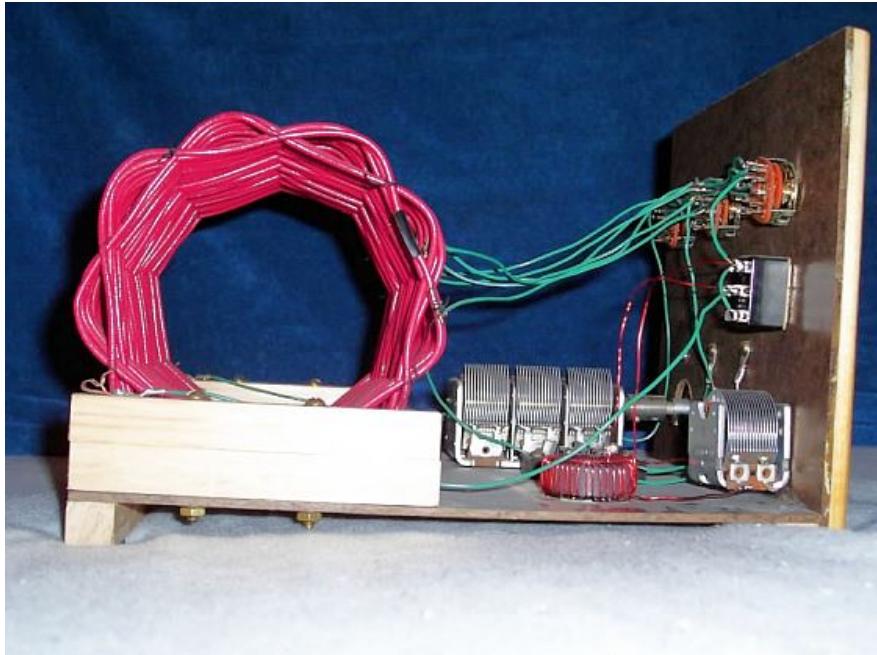
Alongside the detector coil, as shown above, is the plug-in coil of a homebrew gate-dip oscillator connected to a Racal Nixie-tube digital frequency meter. By carefully adjusting the tuning of the GDO, the dip of the detector coil resonance can be found to about +/-20kHz accuracy, and used to find the station on the spotter radio, a Sony IC100.

Rich Shivers



I have followed the comments on the Rap 'n Tap board, and agree that conditions were not very good this year. Compared with last year my total station count was down and DX stations were just not there. Disappointed, yes; did I have fun, yes.

I am using a large tapped single coil set. It's an air core basket weave coil 5" in diameter, about 8" long. 66 turns of 14awg THHN household wire. It is tapped every 11 turns with separate rotary switches for the antenna, detector, and capacitor. Normal arrangement has the antenna and detector tapped near the bottom of the coil. By tapping down the tank circuit I can band-spread the top of the band for improved selectivity. The tuning cap is a three section 400uh unit. One section across the coil, the other two section in parallel from the bottom of the coil to ground. A 8 to 1 vernier dial drives the tuning capacitor. Between the antenna and tank coil is a wave trap constructed of a tank circuit and a coupling coil. Both trap coils are wound on a single ferrite core. Headphone are WE 509's. Detector is a 1N34. Antenna is a T arrangement; 40' across the roof, with an 8' lead-in, the other leg drops straight down for 12'.



Lou Dayich



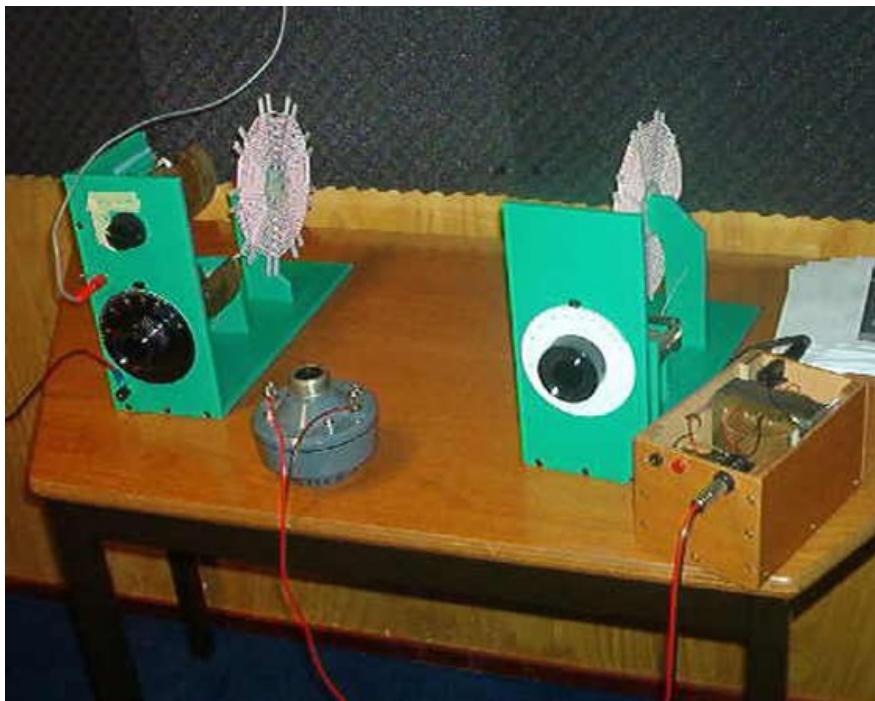
I built a new set for this year's contest. Some components were transplants from the 2004 contest. This set uses three coils and 5 variable capacitors, you will also notice three knife switches that were used in various parts of the receiver.

The antenna coil is approximately 30 turns of close wound magnet wire, apx. 3 inch diameter. The caps (top and bottom) on the left side of the receiver provide parallel and series tuning to the antenna coil. The alligator clips on both caps allow the caps to be easily taken out of the circuit. The detector and trap coils are apx 4.5 inches, 9 point basket weave coils. During most of the contest, I actually set this up with the trap in the middle and the set became triple tuned.

The detector coil is a dual gang Russian variable cap (built in vernier) and the knife switch allowed me to use one or two gangs for detector tuning. The bottom right cap uses the same type of cap and knife switch arrangement for ground leg tuning. The top right cap was fitted with a 10 to 1 vernier reduction for wave trap tuning. The phones are sound powered cobbled from some USI elements and a bogen matching transformer can be seen mounted under the "shelf". I used two diodes at different times during the contest, an FO215 (solo and configured in a Hobbydyne set up) and a schottky diode.

As you can see the radio case "was" a wooden breadbox and the door came off making a nice shelf. On the left side you will see a stand alone inductive antenna tuner, this helped during the contest and is really great for casual listening; with the caps configured in a certain fashion, I can tune 5 or 6 of my regular stations just by clicking the rotary switch on the tuner. I had more points and station count with this year's receiver, but due to high winds just prior to the contest lost my best antenna. I ended up with a sloper apx 80 feet long and about 25 feet at its highest. Lots of fun! It is great to see all the radios that been built.

Dick Kleijer



My receiver is build with separate unit's.

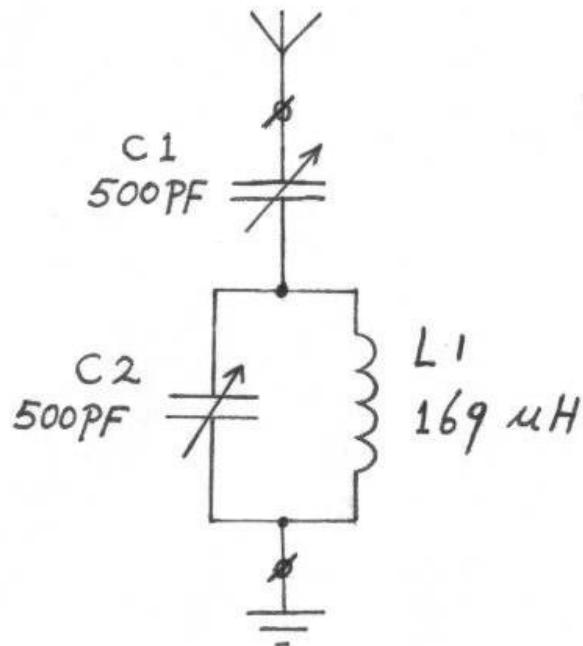
- the antenna unit
- detector unit
- audio transformer unit

The coils are made with litz wire 660/46 and are wound on very low loss polypropylene formers. The diode is a double shottky diode, type: HSMS282K. The transformer unit has a input impedance of 1600 k.Ohm, this is about the impedance of the detector LC circuit, so there is maximum power transfer.

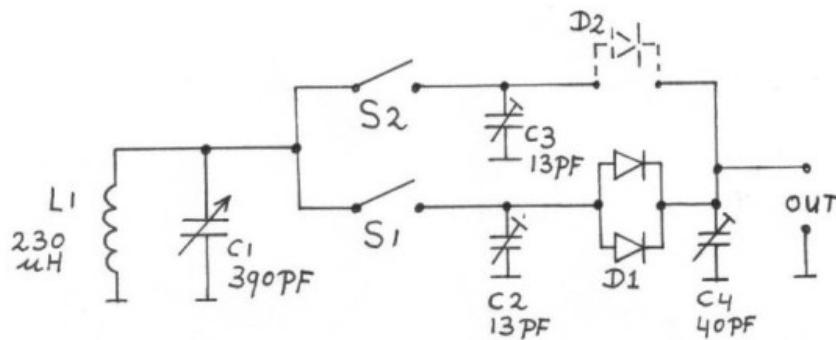
As loudspeaker, I use a driver unit of a horn loudspeaker. The antenna is a 22 meter (72feet) wire, with the highest point on 18 meters (59 feet). On the picture, you see the antenna wire coming down from the top of the mast. More info about my receivers, you will find on my website: crystal-radio.eu



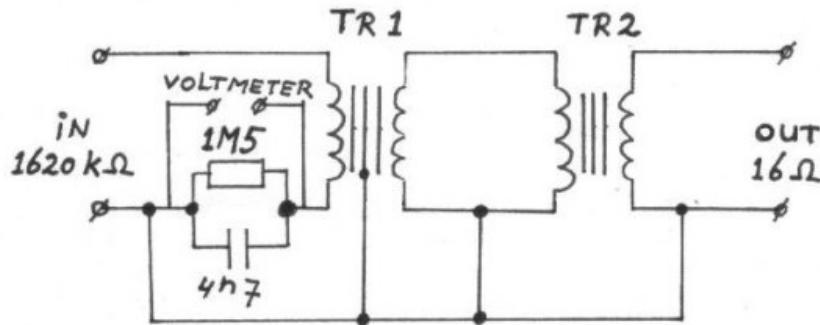
Antenna



Antenna matching unit.



Detector Schematic



Audio matching unit.

[Back to the main radios page.](#)

Select Menu

- [Home](#)
- [About Us](#)
- [Contest Results](#)
- [IAD Contests](#)
- [IAD Entries](#)
- [Antenna Matching](#)
- [Antennas](#)
- [BHAM Radios](#)
- [Crystal Contests](#)
- [Crystal Radio Entries](#)
- [Sprint Contest](#)
- [Headphones](#)
- [Projects, Mods](#)
- [Favorite Links](#)
- [Contact Jack](#)

Sub Pages

- [Main Page](#)
- [2004 Page 1](#)
- [2004 Page 2](#)
- [2004 Page 3](#)
- [2005 Page 1](#)
- [2005 Page 2](#)
- [2006 Page 1](#)
- [2006 Page 2](#)

- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

Crystal Radios Of The 2006 Contest Entrants

Page 1

Charles Pullen (Chuckster)



Station count was a little better than last year. I modified the metro to have a toggle tuned antenna, added vernier drives for the antenna and detector capacitors and installed an old 5 gang fm tuner to give the detector circuit a selectable bandspread cap.

The antenna is a sixty foot inverted L approximately thirty feet up, and the ground is two four foot copper clad grounding rods tied together. I slapped to inline wave traps together to help tame the bandmasters. I used my copy of Steve B.'s ultimatch for impedance matching, and my head set was two philmore xtal earplugs connected to the ultimatch with a radio shack mono y adaptor.

My coils were severely mismatched and pretty beat up as seen in the photo of the "improved metro", but just ran out of time before the contest began to conjure up a new set of coils. I plan to replace the coils with toroids next year ala the TK2 circuit. Experiments with the toroids look really good but again didn't get them ready in time for the contest.

I'm pleased with the results I got considering the shape my coils were in and the really warm weather conditions we've had ...

Chuck

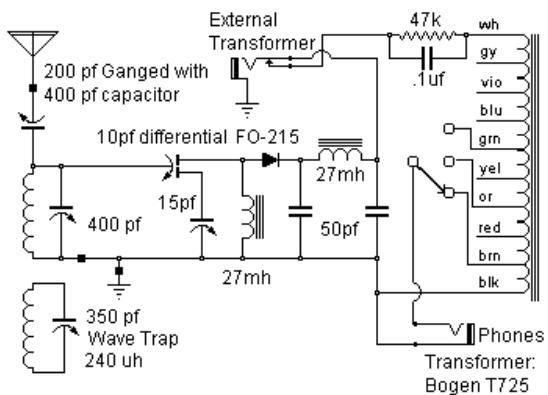


Dave Schmarder



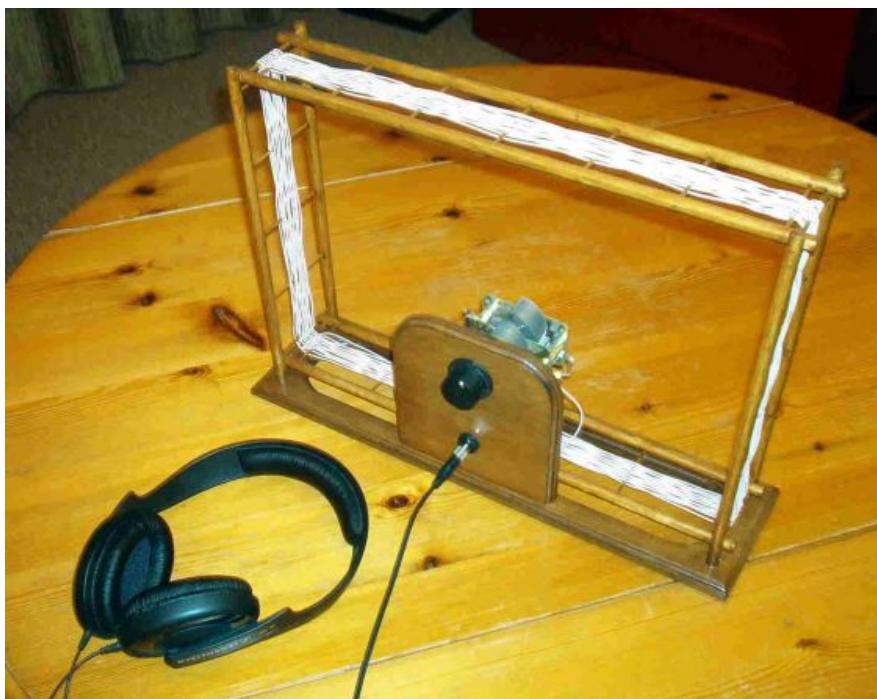
Here is the web page with additional comments, etc. [Dave's 2006 Contest Log](#) [Dave's #63 Radio](#)

...I used my #63 set with the crystal detector on the antenna tuning unit board...The other coil is a wave trap circuit.



Hobby Class Crystal Radio (c) 2006, D. Schmarder

Dick Kleijer

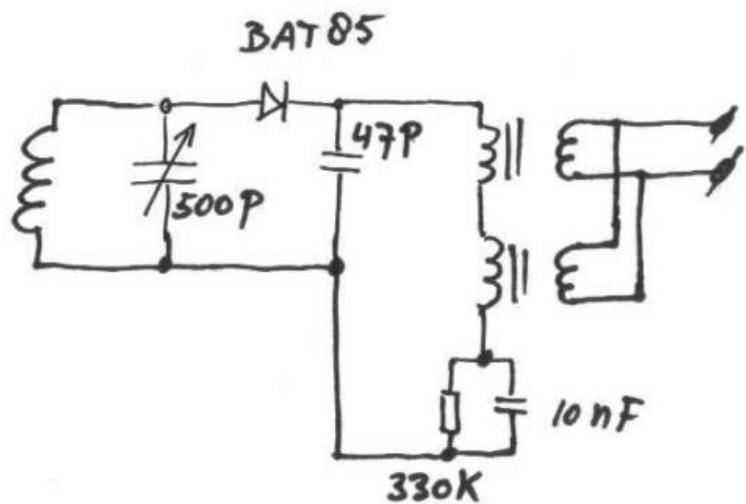
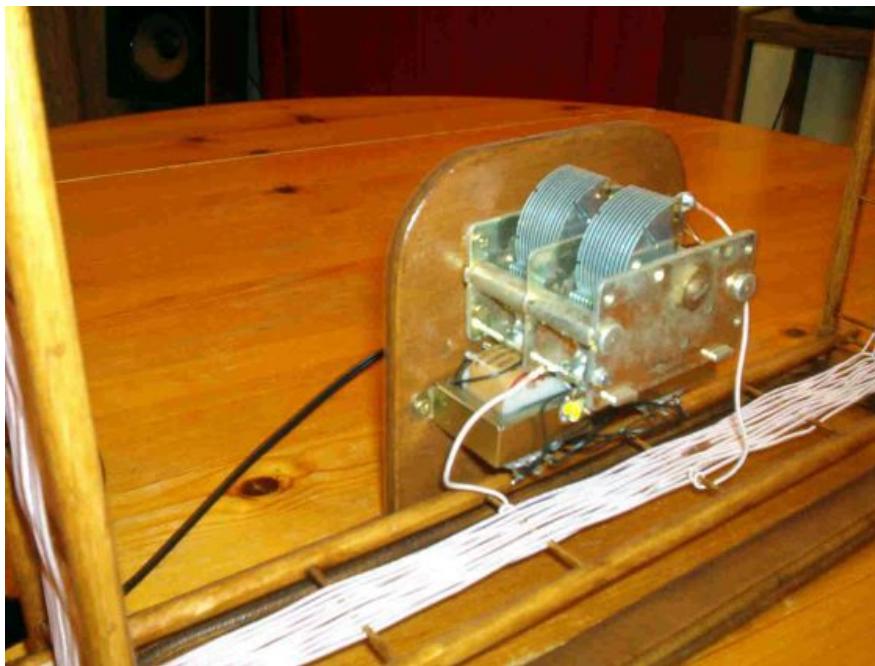


The receiver is a loop receiver with sides of 26x38 cm (10x15 inch). The wire is 660x0.04 mm litz wire (660/46).

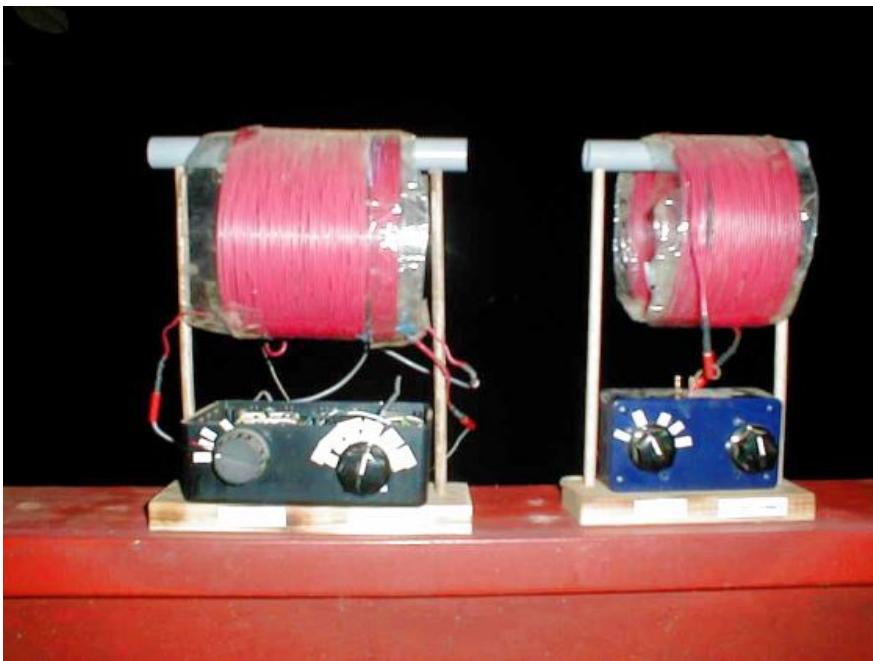
Number of turns: 16

The two transformers have a total primary impedance of 300 k.Ohm. The headphone is a modern 2x32 Ohm type (Sennheiser HD202).

Dick Kleijer



Doug Herigstad



The radio I used is a double tuned set with the coils space wound on a 5" form. (3 liter soda bottle). I built a variation of Owen Pooles' "Project Radio" on his website.

The antenna coil is 35 turns of space wound solid 18ga hookup wire. I used a combination parallel/series Toggle tuner with separate 365pf vcaps with the series vcap in the ground path instead of between the antenna and primary tank. This gives me kind of a band spread.

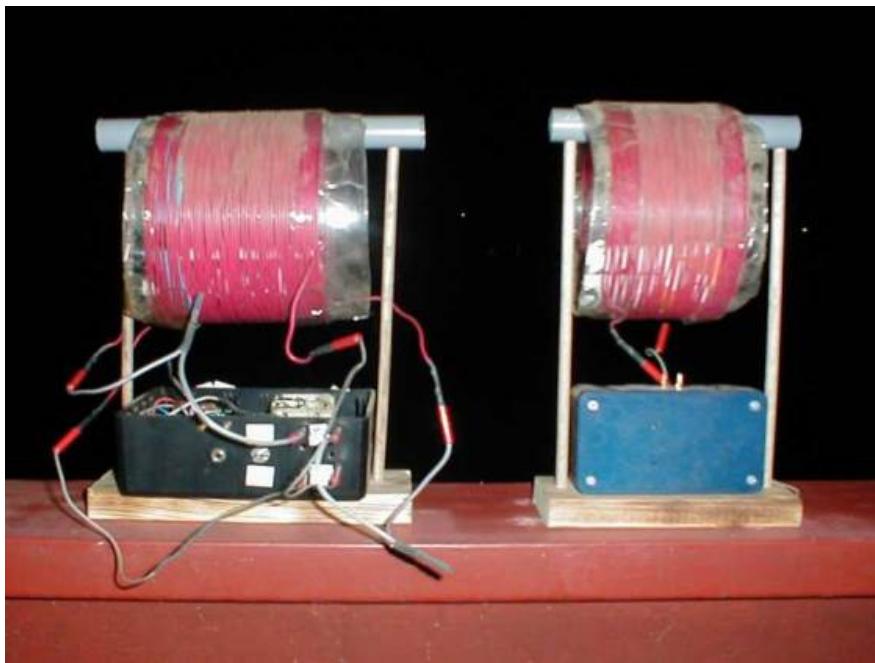
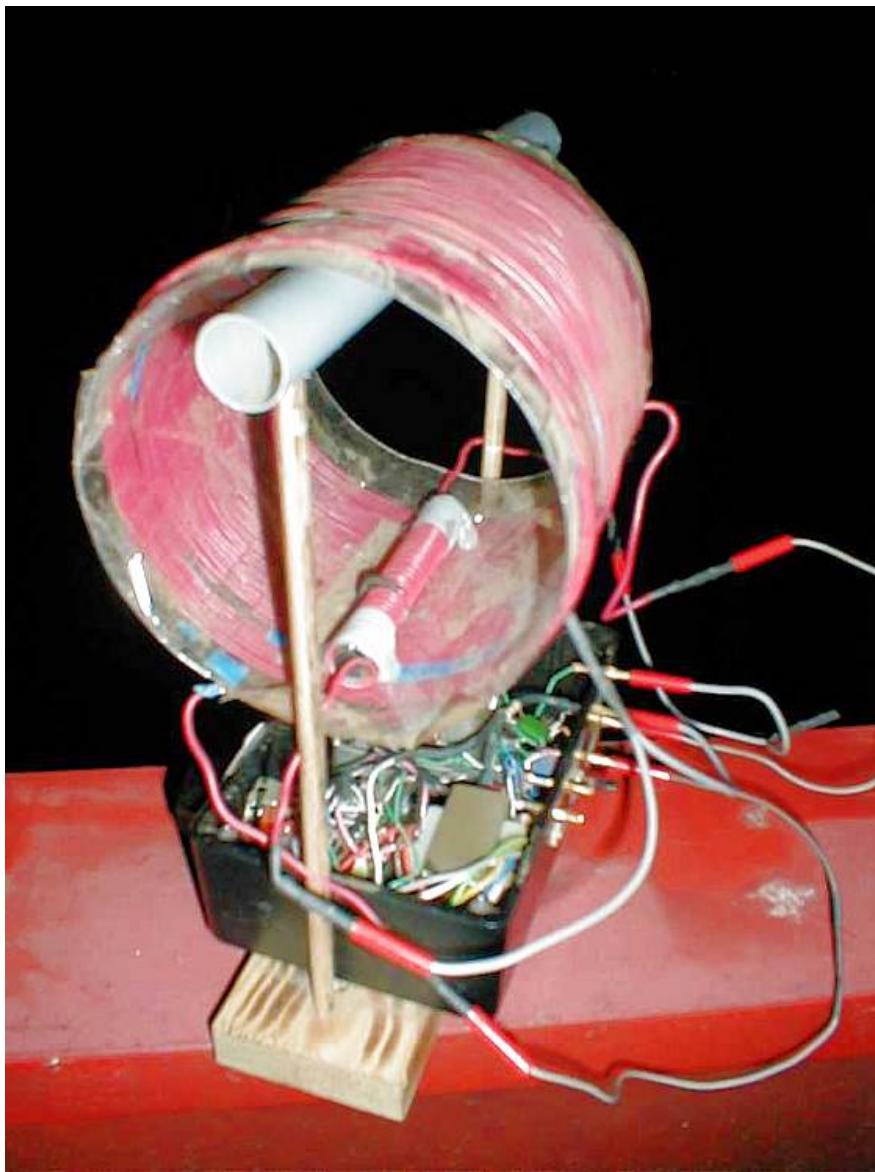
The secondary or main tank vcap was pulled from an old battery set and has a 6:1 vernier built in. The main tank is 47 turns of space wound 18ga solid hookup wire on a 5" form. Only the antenna circuit is grounded to a cold water pipe.

The detector coil is solid 18ga wire wound on a 4" ferrite rod and fastened on the inside of the main tank. The detector itself is a 1N34A diode connected through a 39K ohm resistor bypassed with a .1 mylar capacitor connected to the white lead of a Bogen T725 transformer.

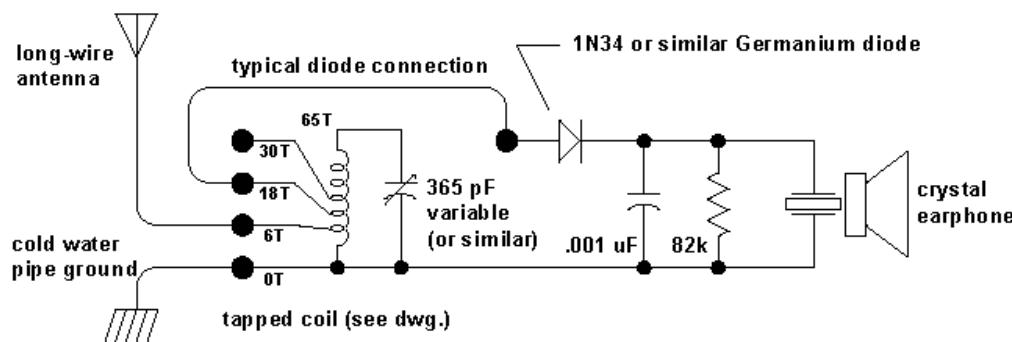
The headphones I used were the elements pulled from a discarded hearing impaired telephone series wired into a set of shooters muffs. These sound elements are much more sensitive than regular telephone elements. They work the best on the 375ohm tap off the Bogen. Much better than my 2000 ohm Newcomb magnetic headset.

The antenna itself is 12ga stranded wire 50' high and 100' long on the horizontal part oriented east to west. The far end is the west end ...

Regards,
Doug Herigstad



Ed Phelps



Crystal radio with typical connections for a long wire antenna and good ground connections. The diode is connected for weak signals and moderate selectivity.

I've made a few minor changes to the schematic ...

- (1) The fixed value cap is 250 pf instead of 1000 pf.
- (2) The fixed resistor is 100 k instead of 82 k.
- (3) I used an audio transformer plus a set of "big cans"...instead of the Xtal earpiece. (my skull is still distorted from those big cans) I think it'll still work without the fixed capacitor and resistor if I go back to using the Xtal earpiece. This would leave me with a set made from just four parts. I may try running it, in that fashion, next year.

73, Ed NN2E

Evan Haydon



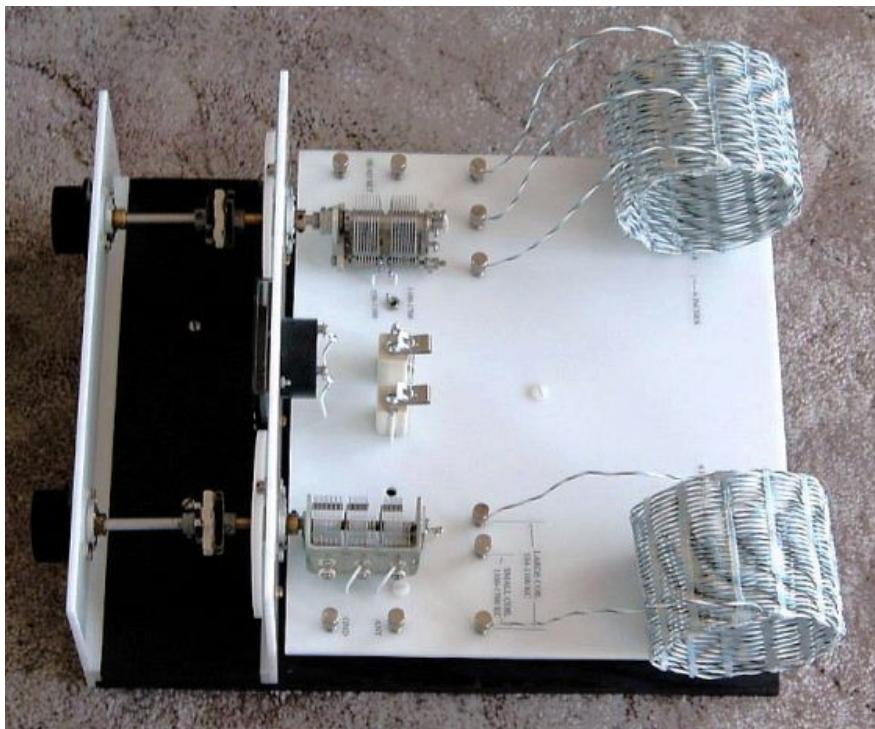
The SUPERCRYSTODYNE

I decided to get serious about the 2006 crystal radio contest and make the maximum commitment to do my best. I knew that I could do better than what I did in the 2005 contest. I wanted to see what a maximum commitment would produce. I started the day after the 2005 contest ended. The following is committed, devoted, crazy, or whatever you want to call it. The following documents over 400 hours spent toward this goal. After all, I'm retired and have plenty of time. What better way to spend it?

First thing was to build a new and better crystal radio that had the maximum efficiency that I could possibly put into it. The design would use the same basic circuit as I had been using. The coils had to have the highest Q possible. I needed a test instrument to measure Q. Thank you Ebay for allowing me to purchase one. Now to get some good wire to use. I purchased some different guages of stranded silver teflon wire. Thank you

Ebay again. I wound many many coils. I found the proper size for maximum Q at the frequencies to be received. No larger or smaller wire size is better. No larger or smaller coil diameter is better. No more or less turns of wire is better. Maximum Q is found. Now, one pair of coils in the receiver will not maintain maximum Q all the way across the broadcast band. I use two different sets of coils. One set for 530-1100 kc. One set for 1100-1700 kc. Now I have maximum Q across the whole broadcast band! These coils are the basket weave type held together with hot glue. They are air core coils using 22 guage stranded silver teflon wire. The two sets of coils can be swapped on the radio in less than 60 seconds.

Both of the variable capacitors that I use have porcelain insulation for the stator plates. The range of tuning must cover as much of the 180 degree range of the variable capacitors as possible. This must be done for both sets of coils with no critical lossy switches or taps on the coils. This was accomplished by using dual section capacitors and a couple trimming or padding fixed silver mica capacitors as necessary. The only tap on either coil is one on the secondary coil for the detector crystal. The position of that tap was determined by actual on the air listening for maximum selectivity and sensitivity in that order. The support for all RF parts is white 1/4 inch thick plastic. All wiring in the radio is made using stranded silver teflon wire.



Now I had to have calibrated dials to quickly and accurately go to any frequency. Each of the two tuning shafts pass through the two panels. Each has a six to one vernier attached to the panel. So, each shaft has a 36 to 1 tuning reduction! On each shaft between the two verniers is an insulated flexible coupler. This isolates the tuning knobs from the RF circuits of the receiver to eliminate hand effect capacitance to the receiver. On the front of the rear vernier I placed a four inch diameter plastic disc. This disc is directly fixed to the shaft of the variable capacitor. On this disc I have paper dials calibrated for both coil sets. Each coil set uses a different colored ink. They are held on by double sided tape for easy removal. Thus, I can remove and make a new one in about a half an hour.

The detector is two parallel 1N34 diodes. They were selected for maximum sensitivity to a weak signal by on the air testing. I have a 50 microampere meter in series with the diode detector. A signal of less than 1 microampere is 100% readable. I am about 700 km from Chicago and Denver. It is not unusual for KOA or WBBM to come in at a full scale reading of 50 microamperes.

The headphones that I use are unique. I started with two USI balanced armature low impedance elements taken from an old sound powered handset. I first took them apart. I removed the coils. I took all of the wire off of the coils. I rewound them using super hair fine wire from a 6000 ohm sensitive relay coil. Each headset coil now measures well over 2000 ohms dc resistance. They were installed into a cheap, but nicely padded, headset that I already had. They are very sensitive. I also like the frequency response of them as they reproduce higher audio frequencies better than the lows. The lows tend to be "muddled" on crowded frequencies.

Last summer was antenna experimenting time. I put up, tested, and took down more different sizes, lengths, heights, and orientations of wire than I can remember. Needless to say, considerable time was spent on this aspect of my endeavor. What I wound up with was a wire about 200 feet long that generally runs east and west. It is up 40 feet at the east end, 60 feet up at a point 120 foot west of that, and then continues 80 feet southwest of that ending up 25 feet above ground. The down lead comes off at a point close to the 60 foot support. All wire in the antenna is 18 guage stranded silver teflon wire. I have a ten millihenry choke to ground at the listening bench. Before I put that on, I saw 3/4 inch sparks from the antenna.



Designing filters to kill local stations became a must. I have a one kilowatt station only two kilometers from me. The Q meter came into use again. I ordered a number of each of three different sizes of torroids from Amidon. The coils for the traps are designed for maximum Q at the operating frequencies. I needed five for the top of the band and only one for the bottom of the band. They are wound using 22 gauge stranded silver teflon wire. Each has a small 365 pf capacitor in parallel with it. There is a small winding on each for coupling. These small coupling windings can be put in or out of series with the antenna with a flip of a switch. Any number of traps can or can not be used at any time. They are all mounted on plastic to preserve their Q. These traps work very well and tune very sharp. This filter unit is a separate unit from the crystal radio. Also on this unit is a variable capacitor with porcelain insulation and silver plated plates. It is used to trim the antenna when needed.

By now, I was getting a good start on my quest. Next up was getting familiar with the broadcast band. This means lots of time spent listening. I listened almost every evening and night from the middle of August until the contest started in January. I estimate that I spend at least 300 hours listening and gathering information. I systematically monitored every frequency at all times of the day and night and carefully documented which stations could be heard at what time and on what frequency. The more times that I heard an individual station, I knew that on any given day there was a good chance of my hearing it. All of this information was used in the contest for maximum efficiency of the time available. This is critical because many stations can be heard only during a small window at sunset. Last year in the contest I didn't even listen at this time of day figuring that all of these signals were too weak to be heard. Wow, was I missing the boat or what? This is the best time to listen. I added almost 150 stations this fall to my all time heard list by listening during this period of the day. The information I then had for possible reception of stations was put to use in the 2006 contest. It worked well. 144 stations logged on the first day! The broadcast band conditions on that first night were the best that I have experienced in the past two years. They were nothing short of amazing. I put in 14 hours of listening and logging on that day alone. On every day of the contest I was by the radio for a couple of hours around sunrise, off and on during the day, and from 4 PM until about 11 PM. A person just can't miss that one more station logged. I put in at least eight hours of listening and record keeping for the contest for each of the nine remaining days of the contest. Almost 100 hours during contest week.



Total time spent for construction, preparation, and contesting turned into somewhere near 400 hours of fun. Every day listening is different. That's what makes it so interesting and fun. The band conditions were very good almost every day of the contest. Some nights produced longer

- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

Crystal Radios Of The 2004 Contest Entrants

Page 3

Lem Morrison



N4AHJ 2004 CONTEST CRYSTAL RADIO and OTHER INFO

ANTENNAS:

- (1) End-fed inverted V long wire, 135 feet with apex at 40 feet, two 135 feet counterpoises under the antenna.
- (2) Vertical, 48' tall Tee; top-loading consisted of two parallel wire spaced 38' and run 90° to Southwest and 40° to Northeast; 10 radials with lengths from 40' to 100'; series fed at base with single wire feed. Vertical core consisted of a cage of four parallel wires spaced 12" and two wires from each of the top-loading legs dropped down, spaced 4" from core center, and connected to base to provide broader bandwidth.
- (3) Sloper, 118' with far end at 50' and station end at 8', oriented toward East-Northeast.
- (4) Sloper, 130' with far end at 50' and station end at 8', oriented toward West-Northwest

Ground system: Ham station ground - six ground rods interconnected and connected to shack with two quarter-inch copper straps; supplemented by one 8' ground rod directly under Vertical antenna and 2-4' ground rods under the wires dropped from the top-loading legs, all inter-connected with copper wire; both ground systems connected with two runs of copper braid salvaged from old RG-8 coax. Radials were 17-ga aluminum wire (used for electric fences).

TRAPS:

- (1) Tunable(1) - 2-section variable, sections in parallel, 240pF total; Rook coil with 18 gauge wire, 5.25 inches effective diameter, 47 turns; air-coupled to the Detector coil.
- (2) Tunable (2) (located in Antenna Matching Unit) - both use 14 gauge enamel wire on FT-114A-61 cores and dual-section variables with both sections in parallel.

(3) Fixed (9) (located in Antenna Matching Unit) - 14 gauge to 22 gauge enamel wire on FT-114A-61 cores, silver mica fixed capacitors, and plated ceramic trimmers (one trap for each of the local "powerhouses"). Each link-coupled to the antenna feed to the set.

ANTENNA MATCHING UNIT (AMU):

One 4-section variable capacitor, four fixed capacitors (500pF, 1000pF, 2200pF, and 5000pF), and two coils (42 turns 14 gauge enamel on a FT-240-61 and 26 turns 16 gauge enamel on a FT-114A-61). All components switched to provide four matching arrangements: series LC, parallel LC, inductance only, and capacitance only. Both inductors tapped to provide 23 settings. An antenna switch is provided for switching between up to five antennas.

TUGGLE TUNER:

Capacitor - 520pF variable, 4 sections, 2 used in Tuggle arrangement, vernier is a surplus right-angle unit with a 25:1 ratio.

Coil - Two Rook coils with 16 gauge enamel wire, 5.25 inches effective diameter, 15 turns each, 30 turns total; bandswitched to provide either series or parallel coupling to provide Low band and High band tuning, a la Ben Tongue's arrangement; air-coupled to the Detector coil.

DETECTOR TUNER:

Capacitor - 420pF variable with home-made vernier with a 32:1 ratio (vernier constructed from gears salvaged from a VCR and a TV tuner).

Coil - Two Rook coils with 16 gauge enamel wire, 5.25 inches effective diameter, 20 turns and 21 turns, 41 turns total; bandswitched to provide either series or parallel coupling to provide Low band and High band tuning, a la Ben Tongue's arrangement; switchable taps (High Band: 100%, 75%, 50%, 25% and Low Band: 100%, 87.5%, 67.5%, 50%, 25%) on coils to provide matching to diodes.

Diodes - Three 1N34A Radio Shack equivalents, paralleled and matched for Forward and Reverse resistances.

AUDIO:

Matching - Reproduction of Steve Bringhurst's Ulti-Match circuit.

Headphones - Two Automatic Electric GH-66919 elements (manufactured 1942) out of a military handset.

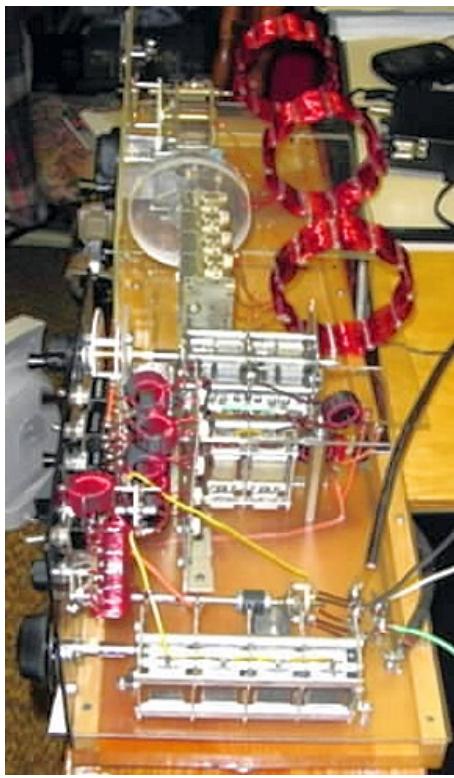
NOTES:

The basic set is the same as my 2003 contest set. I moved the fixed traps from the Toggle Tuner to the AMU and complemented them with two tunable traps. There were a number of times when I used all three tunable traps and one, or more, fixed traps!

I determined optimum AMU settings across the AM BCB for each antenna prior to the contest.



Notice the spotter set and audio matching unit on the bottom shelf.

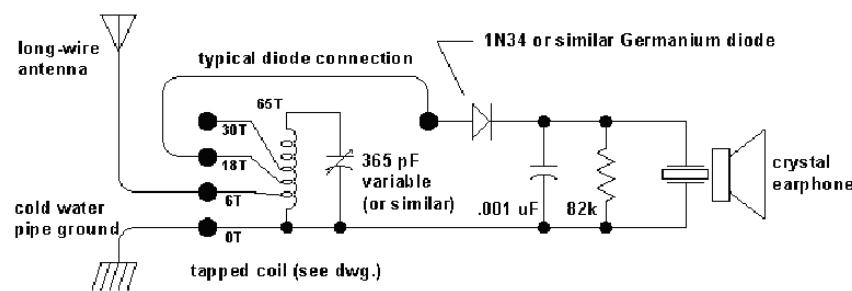


View from right side



View from the left side

Ed Phelps



Crystal radio with typical connections for a long wire antenna and good ground connections. The diode is connected for weak signals and moderate selectivity.

[Click to view larger schematic.](#)

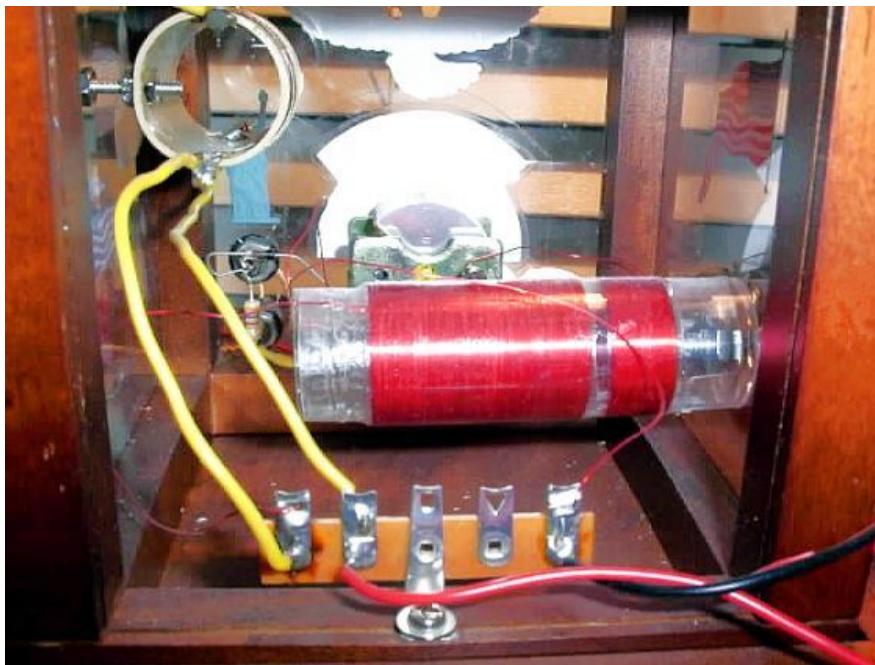
Mike Schroeder



Top View



Front View



Rear View

Dave Schmarder

These pictures and discussion are from Dave's site at: [Dave's #35 DX Radio](#). His full description of this receiver is at his [makearadio.com](#) website.

This is the Crystal Radio to End all Crystal Radios. Hello there. Can't you just feel the tension rising? With this new radio I shift gears again. Large litz wire, high quality variable capacitors, schottky diodes. It won't get much better than this. Last night I am proud to announce that I heard KMOX in St. Louis on this radio. That is my furthest DX ever. I am sure that the ionosphere was hot and the wind was blowing my way, but a heard station is a heard station. Enough bragging and on with the show.

This radio is built in modular form. [Mike Peebles](#) gave me the idea when he had his modular crystal set published in the Crystal Set Society newsletter. The first part built is the detector. This consists of the main tuned circuit with my 660/46 Überlitz Coil. This is of my own design. I am a big fan of litz spider coils, and this is a big litz spider coil. I believe I hit crystal set heaven with this coil. The detector unit also has a selectivity / sensitivity control using a differential capacitor. Besides all of this there is, of course, the detector diode itself. I made a board with a

three position link switch and places for three diodes to be connected. This allows me to easily compare 3 diodes in the same set. After the diodes is an audio output transformer and RC network. The 27 mh choke provides a DC return path for the diode circuit.

The variable capacitor is an old one made by National Radio. I made a wheel and fashioned a vernier tuning system with a grommet and a dowel rod. I get nice, slow and smooth tuning with this system. You can use a vernier dial instead if you don't have one of these capacitors in your junkbox.

The selectivity and sensitivity are handled by a differential capacitor and a piston trimmer. This system was first used in the Hobbydyne II circuit by Jim Frederick. The piston trimmer is for tracking adjustment. You adjust the piston trimmer until the main tuning needs no touch up after turning the differential capacitor. This is a breakthrough in weak signal reception on a crystal set.

The audio transformer matches the very high (100 k ohm +) detector circuit with the much lower impedance headphones. I am using a 100k to 1.5k ohm transformer. If you can find a high quality transformer, go for it.

This covers the detector section of my high performance radio. Next comes the antenna input circuit and maybe a wavetrap.

My tuning unit is now complete. The coil is made from 660/46 litz. The hub diameter of the coil is 3 inches. The coil form made from 1/16 inch styrene sheet is 6-1/2 inches wide and 7-1/2 inches tall. There are 33 turns on it for an inductance of 150 μ H. The variable capacitor has 600 pf per section. Smaller ones can be used, however the low end of the band might not tune. You could probably get away with a 500 pf per section capacitor. This antenna tuner is wired as a "Toggle Tuner".

Earlier I had used a 150 micro henry coil made from 40/44 litz wire. This worked quite well. One night very late, I scanned the dial and with this set up I heard 40 stations. Not bad for a September night.

The two units are placed next to each other. The coil distance for good overall operation are about 15 inches apart. Careful adjustment of the antenna tuner and detector tuning are required. The Q of these types of coils have been measured at over 1000! This ain't your grand pappy's crystal set.

If you build one of these, let me know how it plays for you. Happy crystal set dx. Dave, N2DS

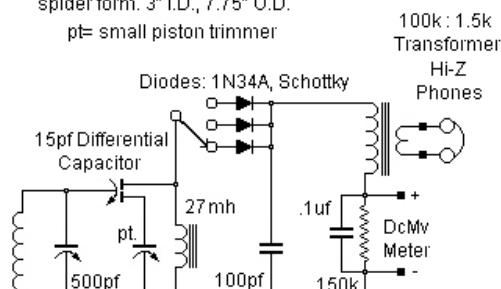
Coil: 660/46 litz wire, 41 turns on styrene spider form. 3" I.D., 7.75" O.D.

pt= small piston trimmer

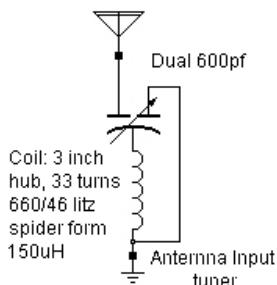
100k : 1.5k
Transformer

Hi-Z
Phones

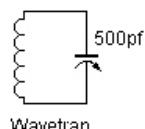
Diodes: 1N34A, Schottky



Crystal Radio Detector Schematic (c) 2004, D. Schmarder



Coil: 3 inch hub,
41 turns 660/46
litz wire, 240uH
spider form



Crystal Radio Antenna Tuner and Wavetrap
(c) 2003 D. Schmarder, N2DS

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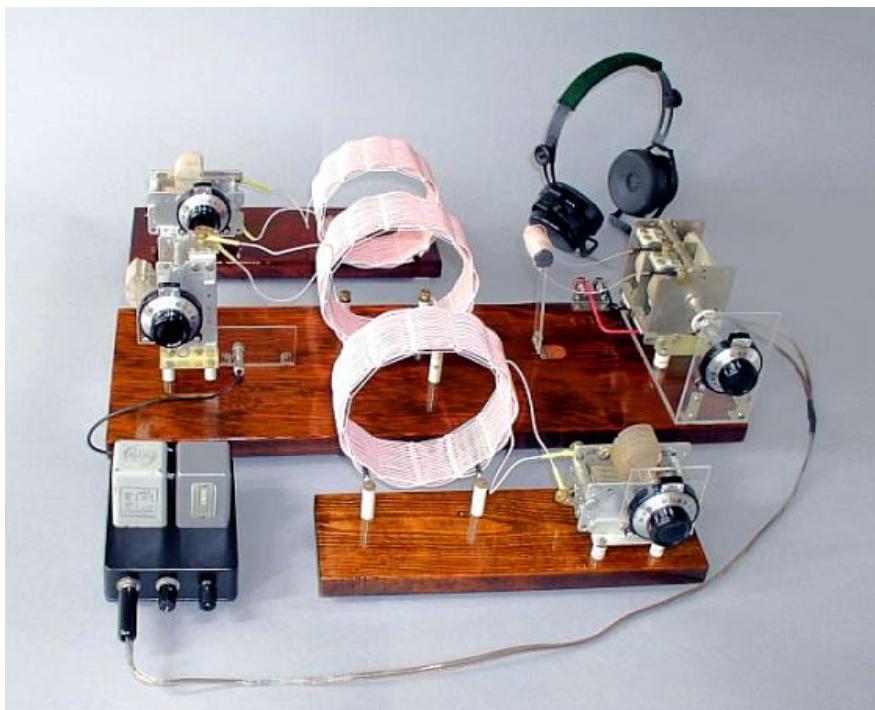
- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

Crystal Radios Of The 2008 Contest Entrants

Page 1

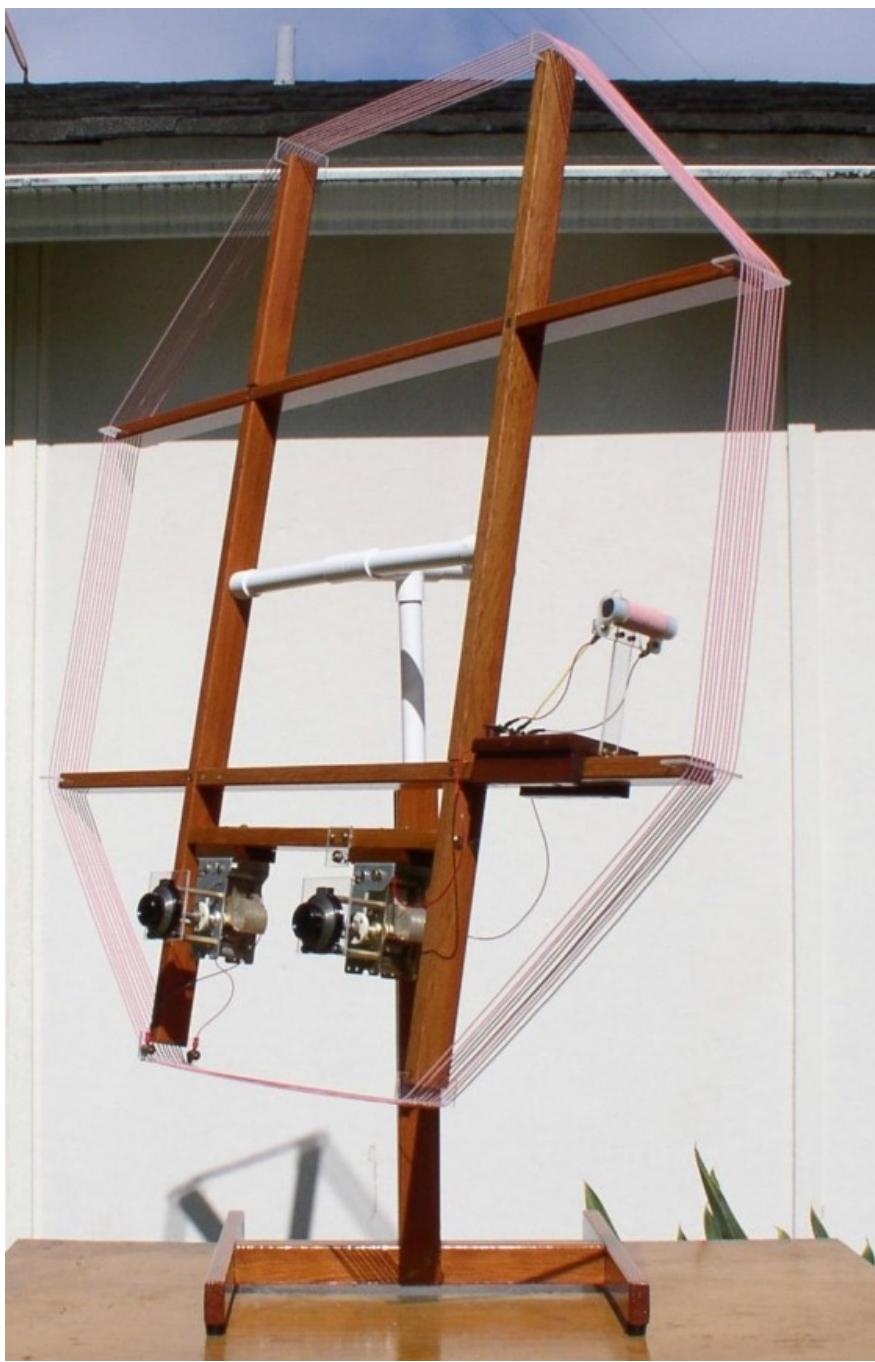
Mike Tuggle, Lyonodyne-17, Open Class Entry

"So, the solenoid is king, the spider needs a make-over and the basketweave is done." - from a post on Rap-'n-Tap - Right.



Mike Tuggle, Loop Class Entry

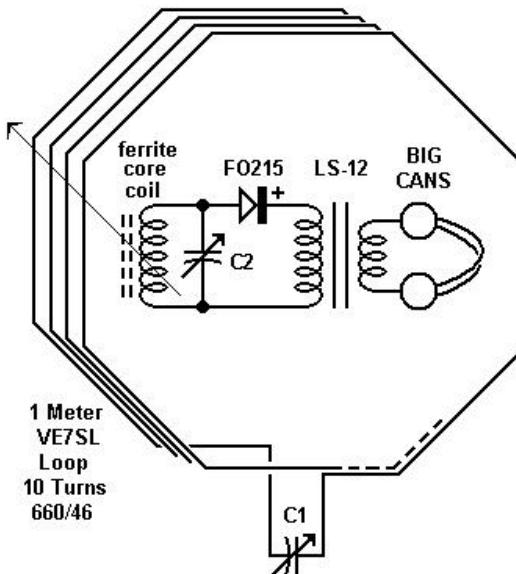
This double-tuned set is built onto a Steve McDonald (VE7SL)-design alt.-az. loop antenna.



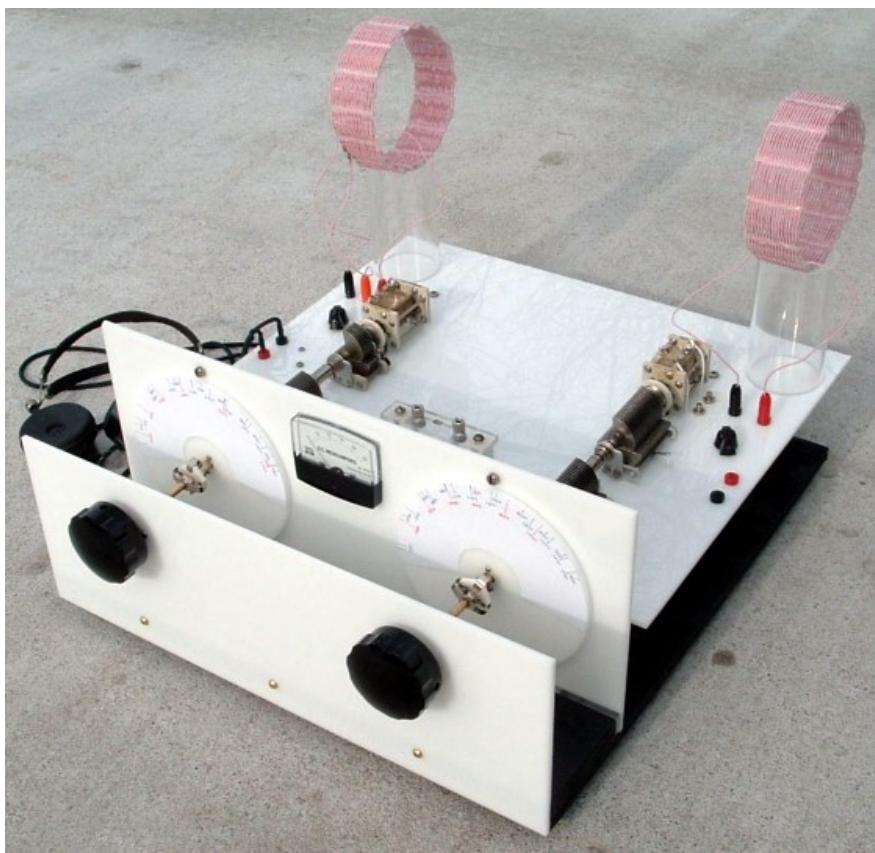
The ferrite coil slides on a loop strut to vary coupling. The idea was to see if mainland stations (2400 miles, and greater, away) could be heard here in Hawaii on a passive loop crystal set. The answer is, yes -- just barely. I really could have done with a bigger loop. Maybe next year.

Leading up to this circuit, I tried several designs using zero bias-voltage MOSFETs. A tapped ferrite coil or a pair of 5-inch diameter basket coils was used for gate and drain-source circuits. The basket coils were way over-coupled. None of the MOSFET circuits had promising sensitivity for possible mainland reception. Only by going to an ITT FO-215, kindly provided by Steve Bringhurst, could the big hop be made. This repeats my finding in last year's XSDX: The MOSFETs provide good selectivity but are not all that sensitive.

Twenty-five stations were heard, five of them DX on the mainland. Two of the DX stations were co-channel with strong local stations. I suspect the DX stations had exalted carrier help from the locals. This may be a potentially exploitable property of loop antennas: their characteristically sharp nulls can be directed to knock down strong local stations while, at the same time, leaving some carrier to exalt co-channel DX stations lying anywhere off the null direction. However, complete nulling the local station takes out everything.



Evan Haydon



I built a new crystal radio this year. I am now using 660/46 litz wire for my coils. One pair of coils for 530 kHz to 950 kHz. A second pair of coils for 950 kHz to 1700 kHz. They are basket weave with a five inch diameter. I wound solenoid coils of many diameters, inductances, and wire spacings with the 660/46 litz. None of them approached the measured Q of my five inch basket wound coils. My calibrated dials are six inches in diameter with two 6:1 verniers in series driving each dial. A third scale on each dial covers 1500 kHz to 1700 kHz. A pair of dual 8-60 pf silver plated porcelain insulated variable capacitors are switched in for 1500 kHz to 1700 kHz. Silver plated trimmer capacitors calibrate them to cover the dial. Overall selectivity and sensitivity are to the point that I really can't complain.

This year's contest was fun because the band was in flux all week. The first day had average to good conditions. The next three days were very poor with spotty receptions. The next two days had cold fronts pass through and stir things up. There were some unusual openings to the

southwest. The last days were lively during the gray line times with some new stations for my all time heard list. That list is now 469 stations.

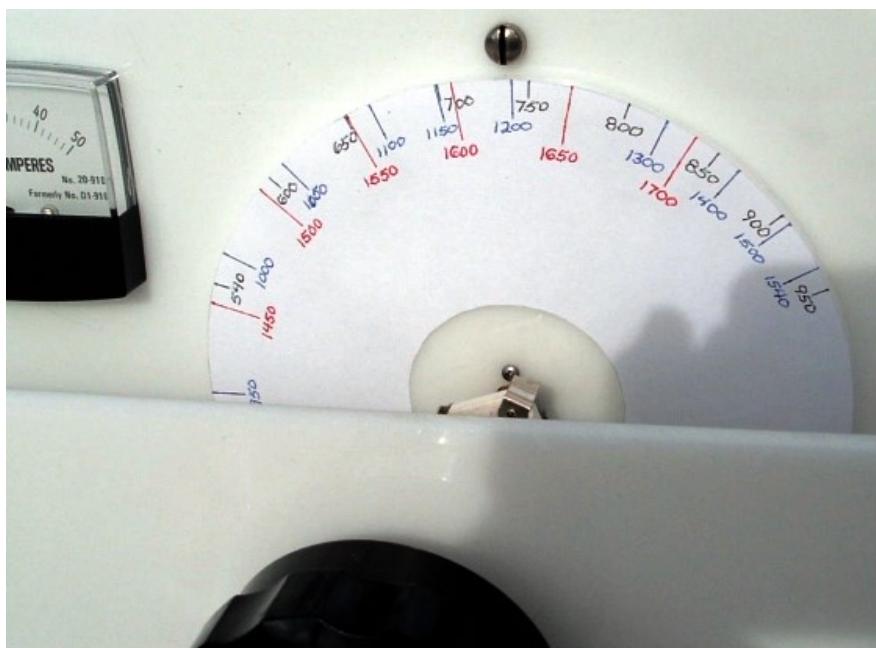
Here is a table of my activities during the 2008 contest.

DATE	#HRS	#STATIONS
1-18	13	168
1-19	13	35
1-20	10.5	18
1-21	7.5	9
1-22	7	15
1-23	9	20
1-24	7	9
1-25	5	8
1-26	6	16
1-27	9.5	3

Total of 87.5 hours and 302 stations. 291 stations identified. 11 stations not identified.

Total points: 556,834

Just in case you haven't guessed by now, I only eat, sleep, and work the crystal radio contest for 10 days in January.



Dan McGillis



The set-up is a standard double-tuned arrangement with hobbydyne coupling. I tried to learn from and use the info that folks have so generously posted on R'nT and Dave's forums. Wish I could "give back" as much as I've received.

Antenna: 200' inverted "V", apex ~40'. I "sling-shotted" a wire over the highest tree near the house.

Ground is a 4' pipe into damp soil + a wire into a pond.

The set is Double Tuned: Ferrite inductors 10" above table top on empty HDPE containers. Getting the coils up away from the table made a BIG difference.

Detector Coil: Vintage ferrite bars, 9x2, 1/8" sep, 35t cw 330/46, 120 μ H. "Battradio" ferrite bars, 2 stacks of 9 (7 high+1 each side) Wrapped with packing foam. This is kind of a 1.25"x1.25", "squarish" coil. I used Used the recent posted Q info with the wire I had available.

Dual gang 10-410pf cap, series-or-parallel (ceramic DPDT switched). The switch in the tank circuit didn't seem to hurt selectivity. Two tuning ranges gave good mechanical bandspread (<25 khz/div @ max f) via Jackson Bros. ceramic insulated cap, + 48:1 vernier, 0-100 dials. The Tuning is VERY sharp - really need the verniers (8:1 dial x 6:1 planetary).

Toggle tuned ATU: 0.5"x4" Amidon 61 rod, 50t cw 165/46, 203 μ H (~best for this antenna). 4" Amidon rods give better Q than 7.5" rods. Separate 365 pf Jackson Bros. caps + verniers. I needed a 48:1 vernier on parallel cap - tuning is sharp.

Hobbydyne: ~ 17pf (ceramic air variable) + 27 mH; choke (Dave Schmarders'). Helped at high end but probably don't need it with these ferrite bars.

Diode: FO-215 diode, rd~258k. (Picked the one with largest rd.). I could switch-in schottky's etc, but this was best overall match.

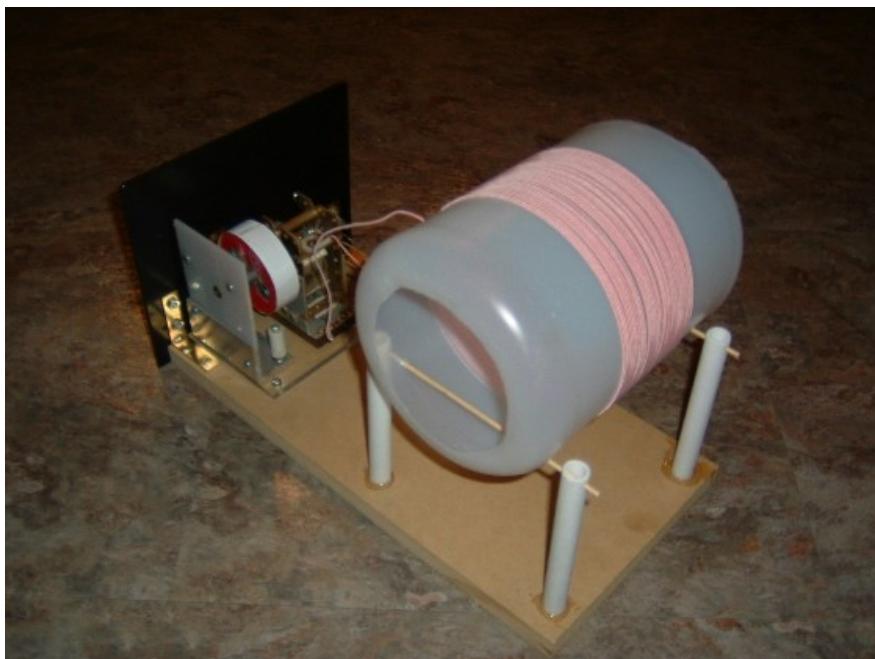
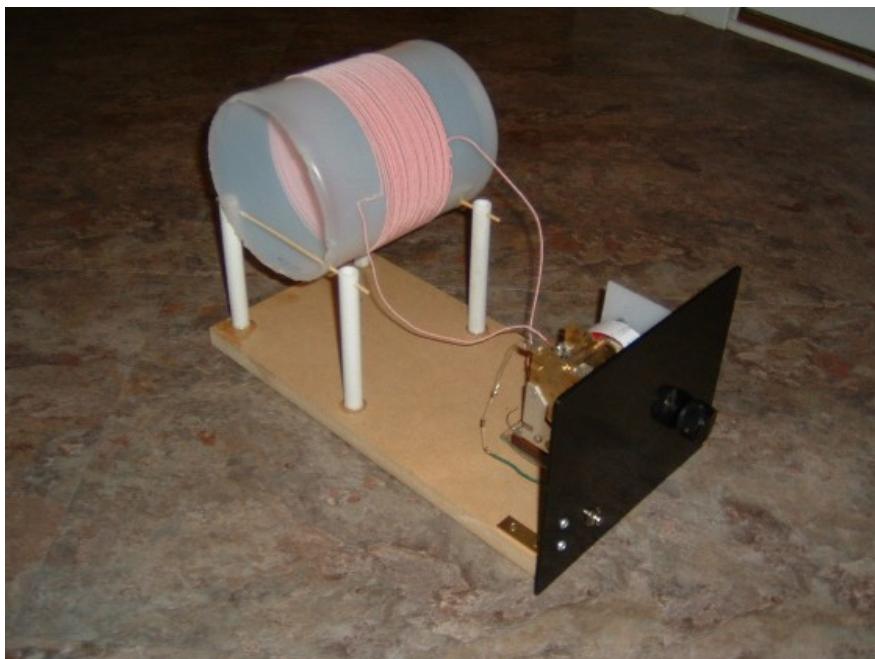
Audio: Dave's 200kUberperformer + 500k Benny, shunted by 1 μ F. Two USI-UA1611-1 SP elements in series. (200k:2.5k).

Calibration: Curve-fitted table of dial settings for every 10 khz of AM band. This is VERY useful for quickly pouncing on DX that pops up then fades.

Op-Aid: Master log of 300+ stations heard over the last 2 years. It really helps having frequencies paired to: ID's, formats, ZIP's, area codes, major roads, distance, grey-line, etc.

Spotter radio: YAESU FT-757GX.

Jack Bryant



I wanted to try something new this contest. My old friend, Lem Morrison, has had a lot of success with air core coils, so I thought I would focus on a similar set for 2008. I had conversations or e-mail exchanges with several friends on a set recommendations. This included Lem, Gil Stacy, Mike Tuggle, Dave Schmarder, and Steve Bringhurst. The set would use 660/46 Litz on some kind of form. Steve's recommendation of HDPE vinegar jugs with a six inch diameter was the final choice of coil form. I used bamboo skewers through the ends of the jugs as part of the supports system. These skewers went into vertical posts of CPVC pipe; The pipes were epoxied into the fiberboard bases. The arrangement is what I call "goal post support". I set the jugs up several inches from the fiberboard to help minimize losses.

The radio has five basic building blocks: the trap, antenna tuning, detector, audio matching, and headphones. The trap was the easiest part since I used a toroid unit I had built a few years ago. It uses and FT114A-61 toroid with a five turn link opposite the primary winding. The ceramic insulated variable cap is tuned with a 5:1 ratio velvet vernier from a WW2 BC-375 tuning unit.

The antenna module uses a variable with a built-in 2:1 vernier and is wired in series with the antenna. The antenna connects to the frame, and the stator connects to the top of the parallel tank circuit. This tank circuit consists of a "goal post" mounted Litz jug-coil and a ceramic insulated variable cap with a vernier, also from a BC-375 tuning unit. These verniers have a 50:1 ratio and use a right angle drive approach. A drum made from a peanut butter jar top provides basis for the frequency readout.

In many other radios I used a dual section cap for the combination of antenna and tank circuit caps, but I wanted additional flexibility. The approach used here worked out great. The separate series antenna cap was especially useful during daytime DXing. It allowed me to use a greater value of antenna series cap for higher volume on weak daytime stations as well as reduced series capacitance when needed for selectivity. The base of the unit is fiber board with a front panel made from a black plastic clipboard.

Next is the detector module with the goal post mounted Litz jug-coil, an FO-215 diode, and a Fair Radio "holy grail" variable cap. This unit also uses the same type base and front panel as in the antenna unit. I selected to use neither taps nor a contra-wound approach on the two coils, just continuous wound coils. I did add complexity by adding an additional eight turn winding between the Litz rope for biasing a zero-bias MOSFET. This was switched in and out via a panel mounted double pole ceramic switch. I had trouble with the MOSFET and switching arrangement and finally bypassed it, using only the diode detector.

A panel mounted phono plug allows connection to the remote audio matching unit. A length of video cable joined the detector and audio units. I build a version of Mike Tuggle's double transformer Stanley match, and it worked great. Mine was wired for only two impedance options. I used the high input setting almost exclusively. I also tried a Select-To-Match and single transformer Stanley matching units for use with the in-the-ear units, but the double transformer Stanley Match seemed to work as well or better than those.

The headphones required more attention than any other part of the radio. The many hours of listening in previous contests with heavy sound powered elements had taken its toll on the nerves around my ears. In the previous contests the irritation became quite severe, such that even one of my eyeballs throbbed with pain! I had mentioned this one Rap N Tap, and a received quite a number of suggestions.

Garry Nichols and John Davidson provided me with an in-the-ear Shure unit to test. Steve Bringhurst provided a set of British phones with a wire behind the neck for partial support and a cloth band over the head. I also tried some Koss and Realistic in-the-ear phones. I used both the Shure and Koss phones in the beginning of the contest. They were comfortable and worked fine, but were not nearly as sensitive as my old phones. Steve's phones were sensitive but were not comfortable. I finally settled on a helicopter headset with salvaged SP elements. The headset fit completely over and around the ears. While these were not as sensitive as my old set of phones, they were a reasonable compromise.

I have used a Realistic DX-398 for several previous contests, and I used it for this one, too. A neat trick is to bring the antenna matching unit near the DX-398. Sometimes the DX-398 needed this extra boost to hear the signal the crystal set was receiving!

I like to use computer logging as I go along, so I used my normal home PC for that. A four foot table from Lowe's and a comfortable chair rounded out the listening post.

[Continued on Page 2.](#)

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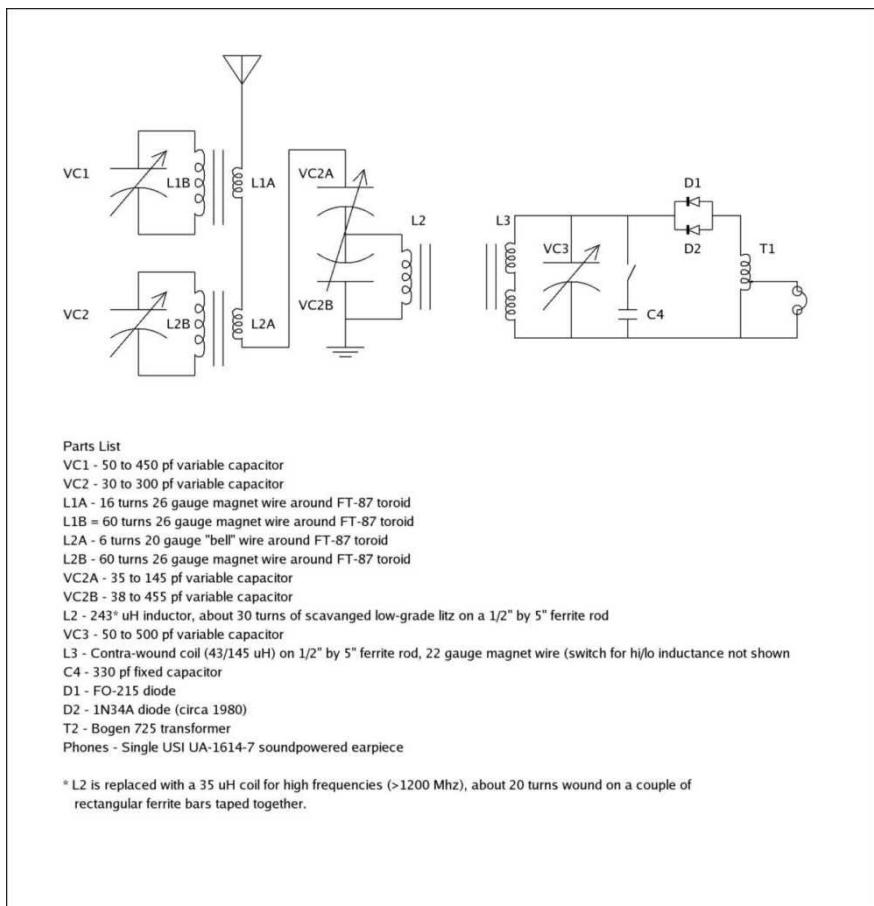
- [2004](#)
- [2005](#)
- [2006](#)
- [2007](#)
- [2008](#)
- [2009](#)
- [2010](#)
- [2006 Sprint](#)
- [2008 Sprint](#)
- [2009 Sprint](#)

- [Previous](#)
- [Next](#)

Crystal Radios Of The 2007 Contest Entrants

Page 2

Jeff Welty



[Click here for the large schematic view](#)

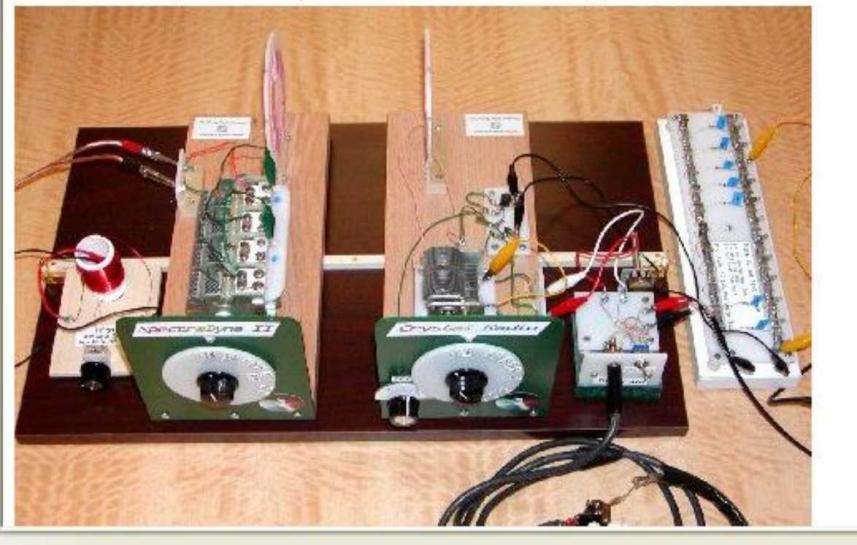
The variable capacitor on the antenna coil is from a radio in that I remember being in my sister's room in the 1970's, (which I dismantled for parts sometime at the end of the 70's, and made my very first crystal set with), and the detector coil is wound around a ferrite rod from the first radio I ever owned as a teen age boy, also back in the 1970's, and died about 4 years ago so I scavenged the ferrite rod from it.

The basic radio is mostly built from parts literally scavenged out of other radios over the years. The only "new" parts are the bogen 725 transformer, FO-215 diode (thanks Dave Schmarder) and sound-powered headphones.

Strong memories in this set for me, and hearing stations fading in and out really brings back memories of the days when I'd listen to my radio, hearing far away stations and caught up in the wonder of it.

Otto Danby

SpectraDyne II
 Double tuned, Toggle
 Antenna Cap.: 4/270Pf
 Detector Cap.: 2/270Pf
 Spider coils; using 165/46 Litz, 2" hubs, L1=40turns, L2=50turns
 SEC 25Pf Cap. and 27uH choke
 Detector FO-215 in test rack
 Headset 4400 Ohm magnetic
 Antenna's: #1 75' AWG 20 solid, #2 75' AWG 14 stranded, #3 88' AWG 14 stranded
 Ground One 8' x 1/2" copper rod pounded in about 6.5'
 Wave Trap 126 turns AWG 30 and 15 turns AWG 22 Capacitor 20Pf to 165Pf
 Tuning Aid Accepts headset jack and Radio Shack Mini Amp, switch to either or.



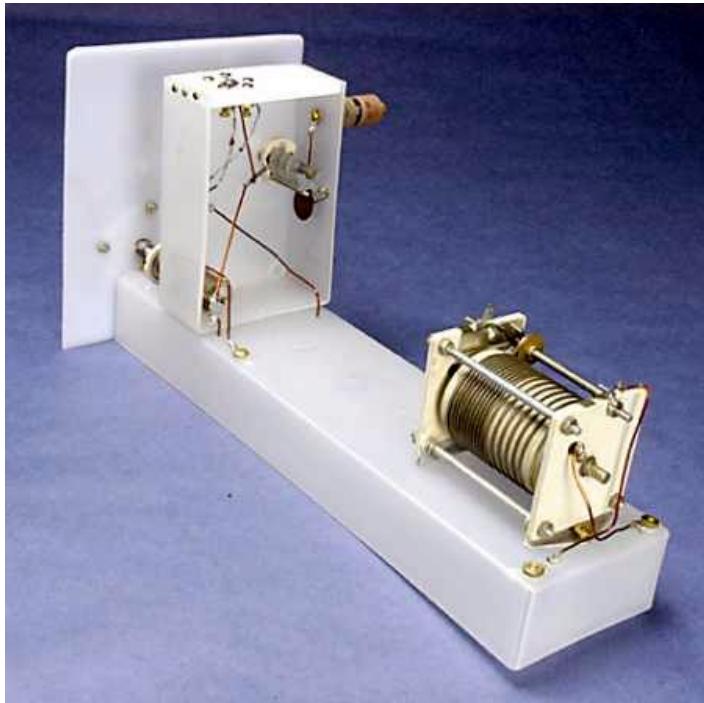
[Click for large view.](#)

Peter Kertulla



2007 CRYSTAL SET CONTEST SET

The rig this year is all new. It is double tuned with 660 litz spiderweb coils. Both capacitors use reduction drives for easier tuning. The detector coil was changed at the last minute to a contra-wound configuration...the jury is still out as to the impact this made. I think I may use separate plug in coils for HI and LO band next year. The antenna is the same as last year... 100 foot end fed up about 25 feet. Headphones are sound powered elements in a reused headset with a bogen transformer that has switched impedances.

Robert Golding



My short wave set is very simple.

It consists of a tank circuit composed of a small Johnson roller inductor with a small 100pf silver plated variable cap. I connected another small variable as an antenna trimmer and included a small trimmer to ground. It has a diode selector arrangement including a single generic Radio Shack germanium (black band) and choices of one two or three paired Schottky IN5711s. I found it necessary to add a bias attachment for the IN5711s.

I had an outboard Benny setup that plugs in between my matching transformer and the set. Therefore I added a tiny watch battery to the wiper and one end of the rheostat. The bias really perks up the IN5711 diodes.

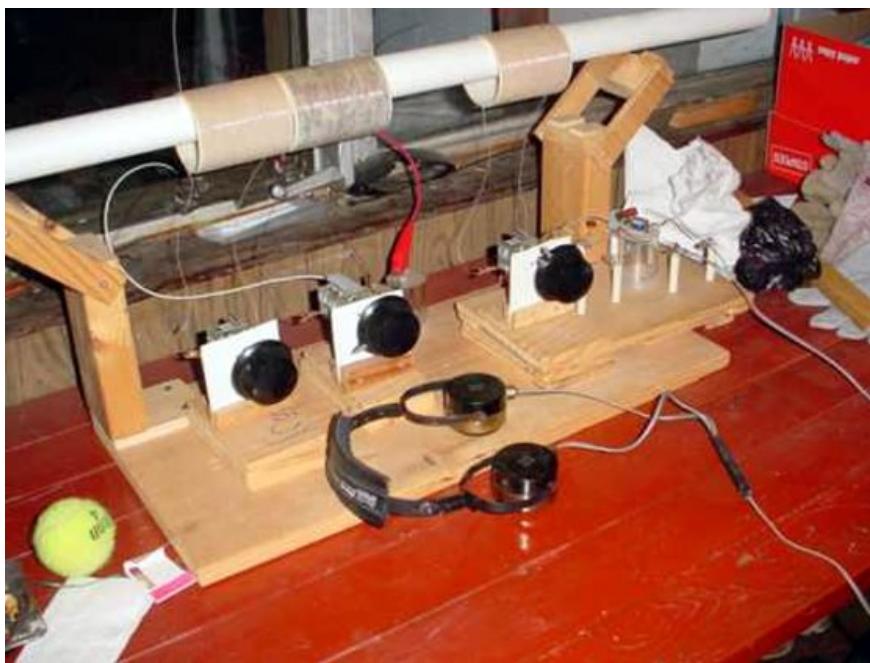
My headphones are Western Electric sound powered matched with a UTC Ouncer transformer.

The antenna trimmer proved to be ineffective. So, I tried Steve B's cap string which helps somewhat.

Naturally I wasn't quite ready when the contest started. So I got through the first couple of nights with the diodes still on clip leads.

I used a couple of small door knob caps for the antenna cap string which is overkill, but I sort of like the look of it.

Steve Hewlett



2007 Crystal Radio Contest Radio Set Description

My 2007 contest set is the same as my 2006 contest set. The set has three coils which slide on a polystyrene tube. From left to right they are wave trap, antenna coil, detector coil. All three coils are space wound (one wire width spacing between turns) copper wire; #24 ga. for wave trap and detector coils and # 23ga. for the antenna coil. All three coil forms are 3" diameter polystyrene tube. The inductance of each coil is approx. 251 uH.

A single Jackson 365 pF VC is used on the wave trap coil and a single Jackson 410 pF VC is used on the detector coil. A dual Jackson 410 pF VC is used on the antenna coil in a Tuggle arrangement. The diode is a FO-215. A Calrad transformer and a "benny" is used in the detector circuit to match the SP headset - USI 1614 - I am using. The antenna is a 3-wire flat top approximately 75 feet long and 13-18 feet high. Ground is a series of three 8 foot copper plated steel rods driven all the way in the ground four feet apart.

Wayne Thelen



[Wayne's Newest Set](#)

- [Contest Results](#)

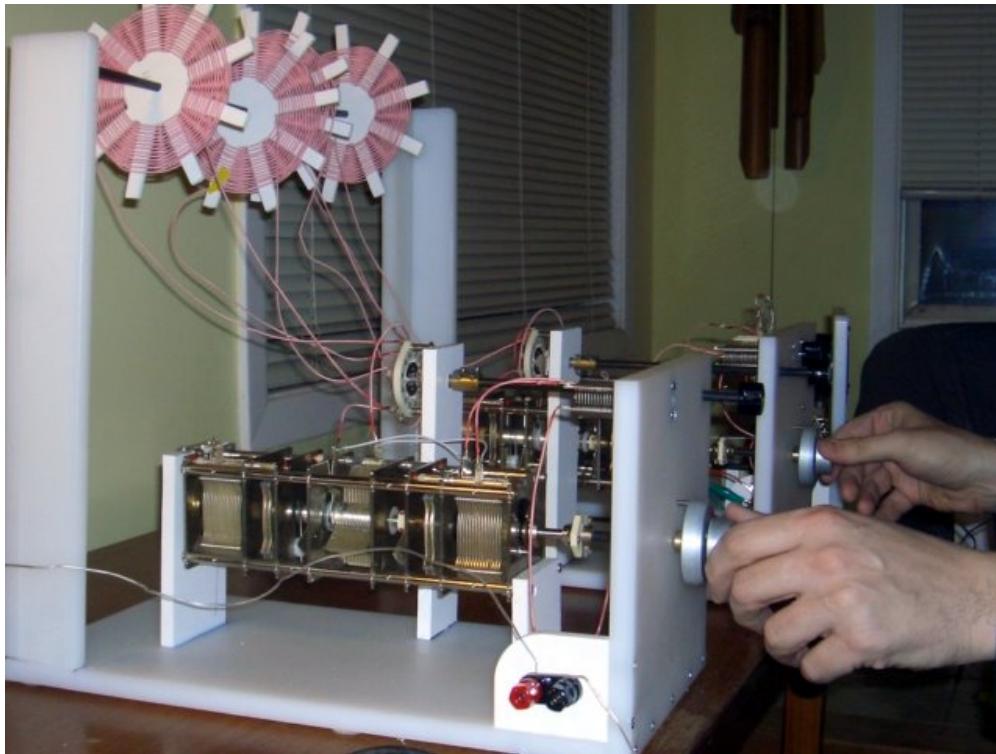
- [2004](#)
- [2005](#)
- [2006](#)
- [2007](#)
- [2008](#)
- [2009](#)
- [2010](#)
- [2006 Sprint](#)
- [2008 Sprint](#)
- [2009 Sprint](#)

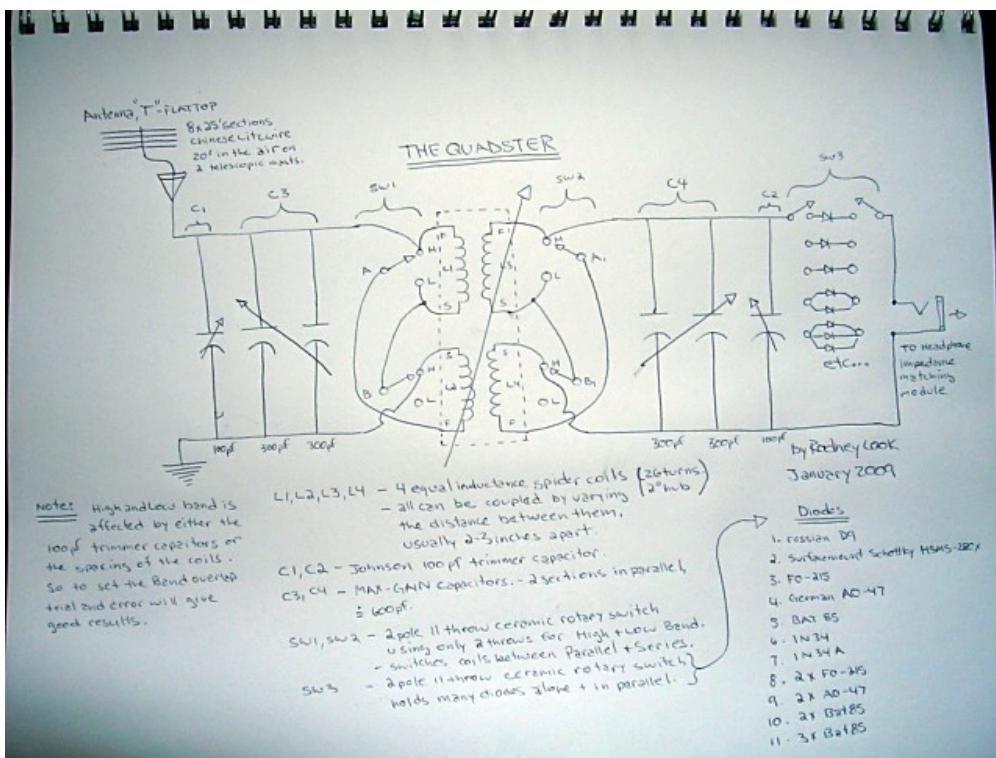
- [Previous](#)
- [Next](#)

Crystal Radios Of The 2009 Contest Entrants

Page 3

Rodney Look, Open Class Entry

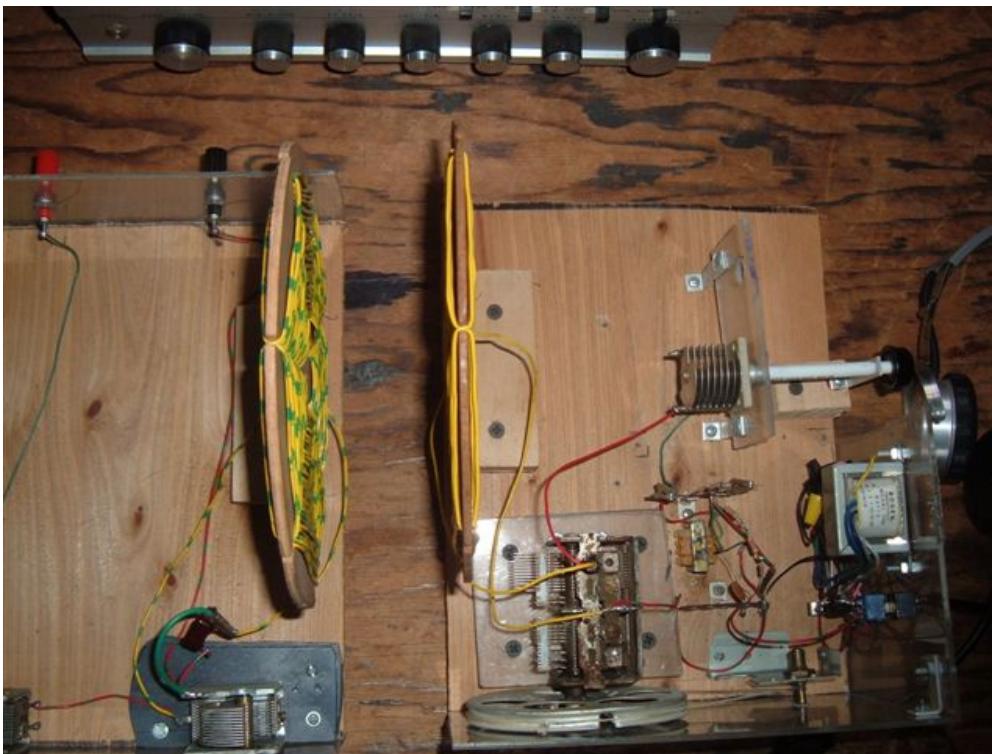




Here is a link to the [The Pictures Slideshow](#) for more pictures of the set.

[Here is a link](#) that shows the location of the stations copied.

Glen Yarbro, Open Class Entry



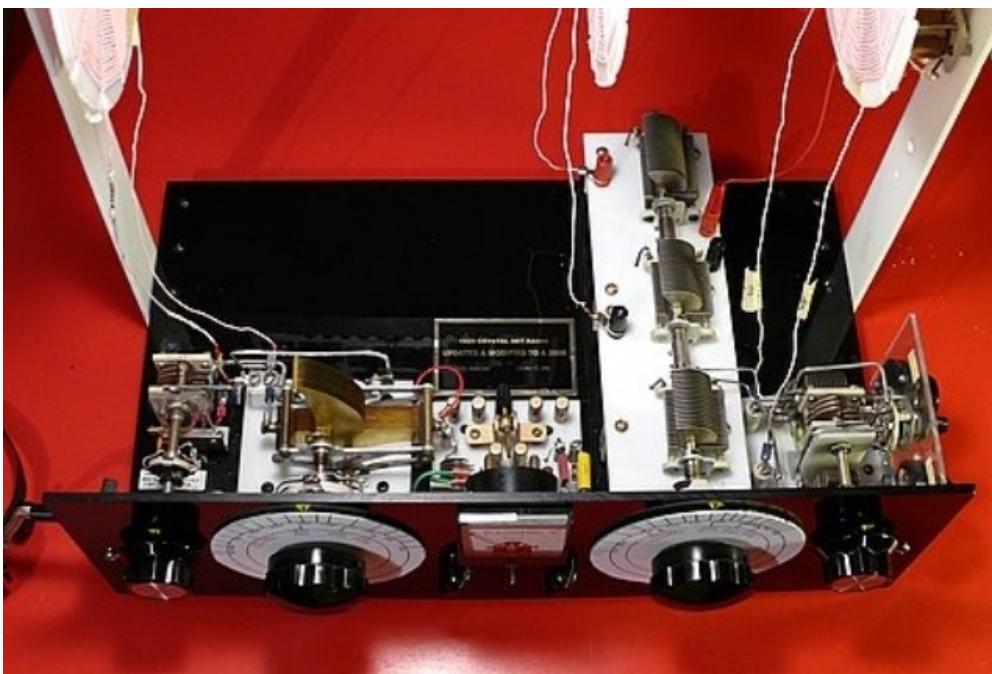
Radio : [Dave Schmarder's #44](#)

Antenna: 80m trap dipole, 30 feet high

Headphones: 4 k Navy phones

Coils were wound with 24 gauge Bell Wire

O. T. Anderson, Open Class Entry



This crystal set has been modified several times, the dials, Var Caps, and wave traps. Being a ham operator I really liked calibrated dials. Some of the local stations are in red.

The right hand 3 tuning caps are the Hammarlund type. The three caps which are ganged together is a "Toggle" front end. The detector cap is an old ancient job from a very early radio. I modified it using HDPE to replace old brittle bakelite. I don't know how good it is, but it looks and feels great. It has good band spread down at 1200-1700 kc. The three coils and output Xformer I bought from that good man, "Dave".

The two right and left small caps are a band spread for about one station. It feels good to "rock" these a bit on a weak station. The "S" meter is a real help. A 3 position switch gives a off, normal and high position. I would not built a new set without one. Since this is a "crystal set" I had to put in new (old type) "Cat Whisker". Can you see it? It also has a place for 3 diodes.

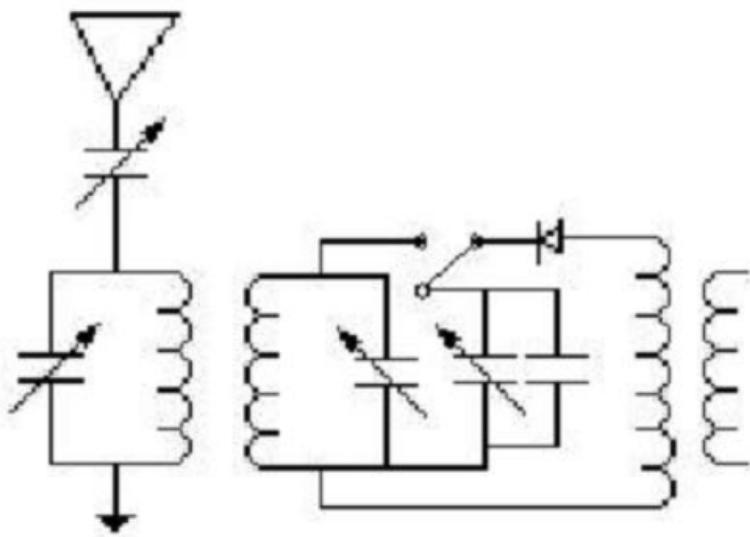
My biggest trouble here in Broken Arrow, OK is 1170 kc. That's KFAQ, old KVOO, 50,000 watts. Big 50,000. Has three towers, see them from our house. I have 2 wave traps, one 1170 and the other is 740, KRMG. The switch and stationary caps are at bottom right. Works OK, but 1170 is still in the background.

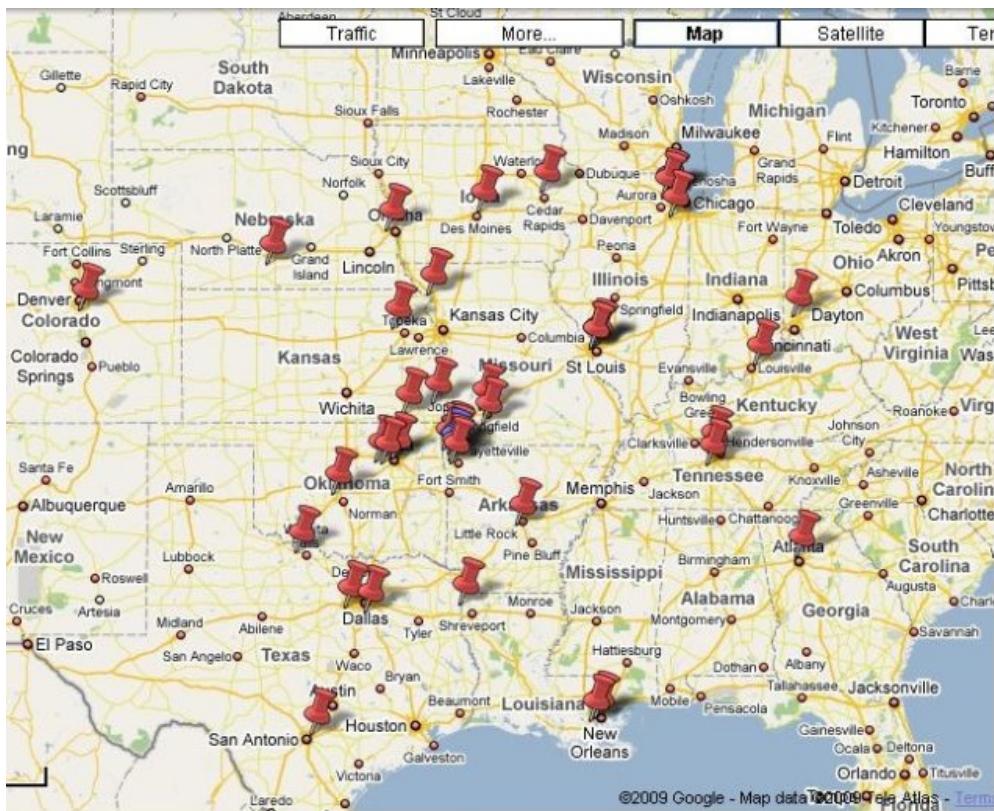
Built up an external trap. It's still there. I accidentally found the trouble moving the set around one day, cleaning up. I nulled out 1170 as I had the set turned around so-so. Apparently the detector coil is a good antenna just like an antenna in a AC-DC radio. So what should I do? Relocate my operating desk, or better yet build a new set patterned after THE LYONODYNE, (which has wave traps on the detector coil).

My wife, Doris, K5BNQ, wasn't crazy about me being back in the shop. She said, when it gets dark, I should come in, build a fire in the fire place, read the newspaper, and have a big cold Pepsi or Mt. Dew. Then maybe she would give me some real good home made chocolate cookies!!! And some ice cream!!!

Who could beat a deal like that?

Mark Hampton, Open Class Entry





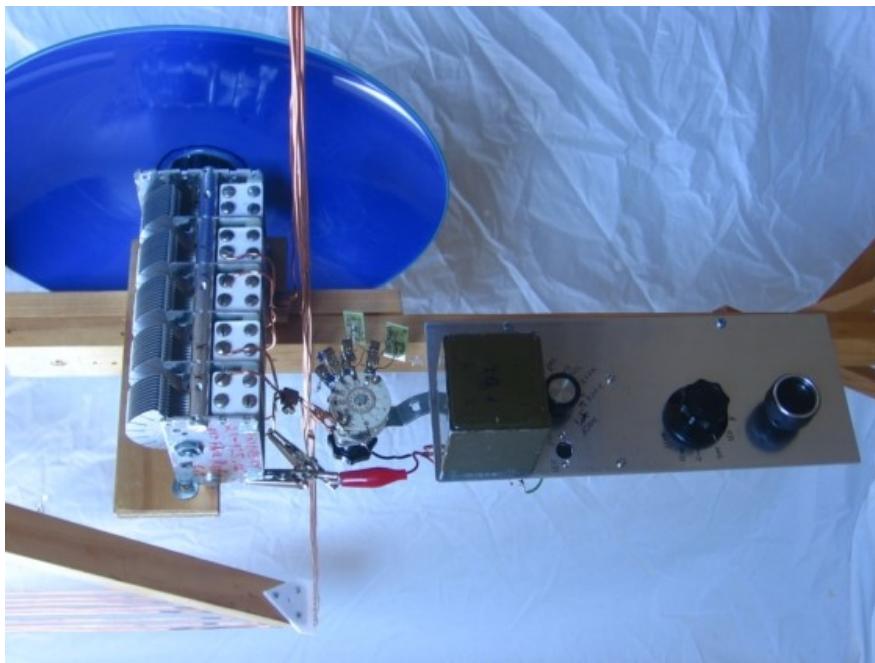
My set is a simple double tuned with a Tuggle front end and home brew friction reduction drives. A high/low switch spreads out the band a little further. The "high voltage insulators" are wood toy wheels stacked up and painted white. I thought it would add to the industrial look of the set.

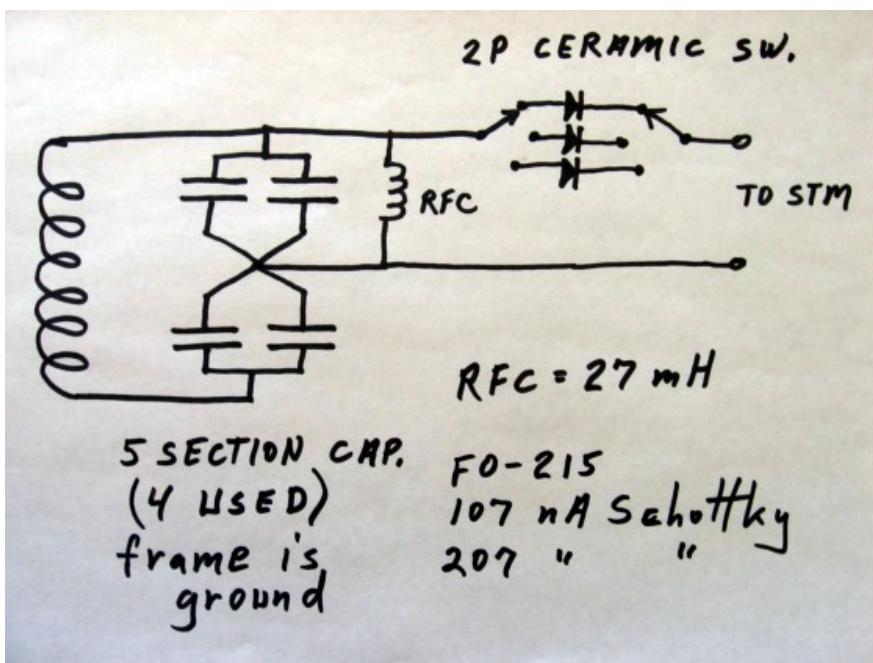
My antenna is a 300' longwire, 30' in the air and oriented NS. The ground is tied to the cattle fencing (welded wire on metal post every 10') that runs all over this part of the country.

The unit is sitting atop my universal match box. The headset is SP units mounted in old Olympus stereo headphones.

The barely visible blue pin is my location on the map.

Garry Nichols, Loop Class Entry





This is the same set used in the 2008 contest, except for a few minor changes:

- I took off the Select-To-Match this year and ran the loop with only the T3/AM-20 transformer (100:100k) and a 107 nA Schottky diode.
- Big can mic elements in series had a 2 uf electrolytic between them and the transformer.

This setup (with short leads) got rid of my FM interference completely, and I did not hear the intermittent hum that I was picking up last year from various orientations of the loop.

Kevin Norton, Open Class and Short Wave Class Entries

Sets: On B'cast I used the K-3 xtalset. It is a 75 ft longwire through a wiperless ceramic 4 gang, then to a 4 ceramic gang wiperless tank (660/46 ferrite assisted air coil). Each var cap is wired so that a 500 gang is bussed to the adjacent 500 gang. So two 500 gangs equal one leg of my cap. The gnd is to the FRAME of the tank var cap (NOT the "cold" stators).

The det tank uses the same coil type and var cap type / wiring layout. There is no det tank connection to Earth or ant tank.

All caps are 6:1 ball driven and have oversized insulated wooden knobs.

A single FO 215 was used fully at the hot end of the det tank. Although single Schottkys HAVE been used in past contests, results were worse this time (for whatever reasons).

The match is 2x UTC A-27s and the phones are David Clark SP types wired in series @1200ohms.

Future K-3 improvements could include raising the match Z by wiring in additional A-27's, changing the benny pot to a higher value and trying various benny caps. Also a set of high band coils should wake things up quite a bit on the high end.

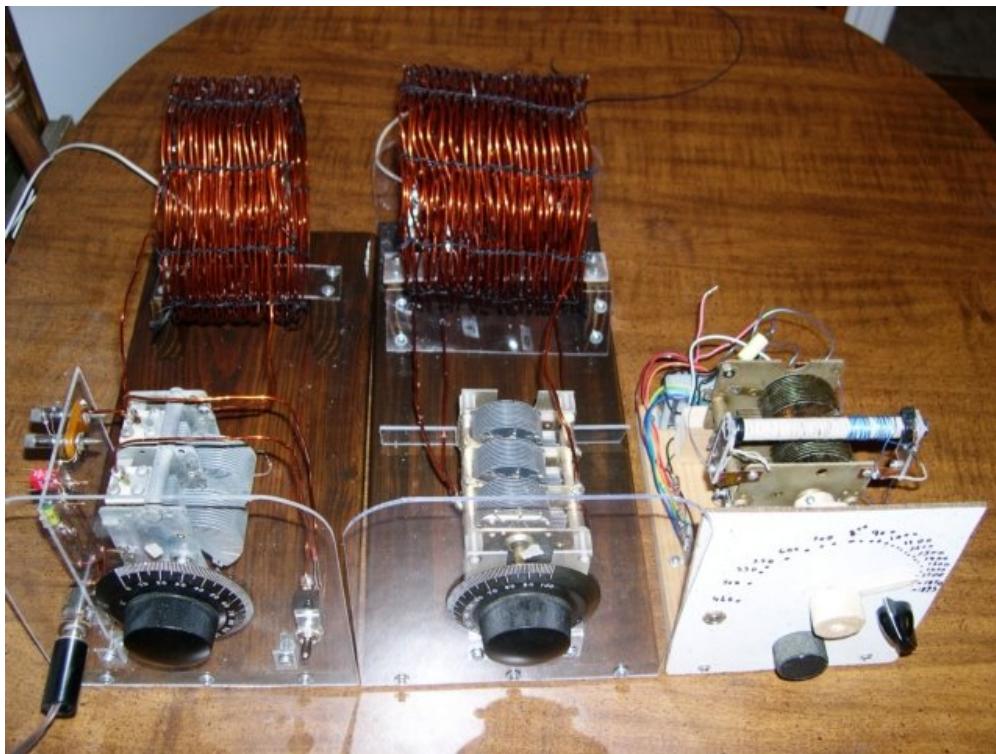
An outboard applied RF bias is available by a weak signal digital B'cast transmitter and coupled to the set by an unterminated litz air coil. This transmitter only covers 600 Kc and up, so an analog Heath signal generator fills in from 530 to 600. Using just a tiny level of (variable) RF greatly narrows the bandwidth. Strong locals are obliterated and signals otherwise NEVER copied come into good audibility. There is an almost "regenny" sound when doing this.

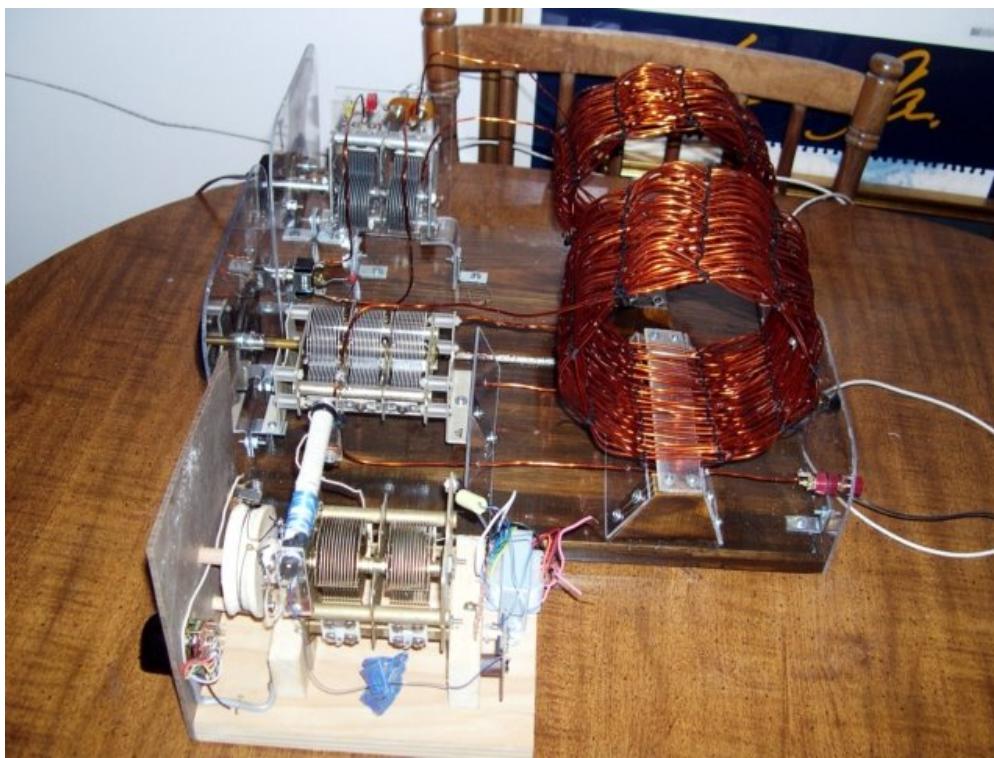
I can find stations by using the analog or digital scales, bias the set into the "supercharged" mode, and then peak all controls. Then I simply shut down the RF, move the bias coil away and wait for a signal to come up into true xtalset passive copy.

The HF set was a simple affair. A wiperless ceramic var cap on 11uH homemade > air dux. There is a two turn ant coil . The tank has no gnd . The det is an unknown diode directly into series xtal earphones.

Overall a good a time, despite a slow start.

Curtis Gamble, Open Class Entry



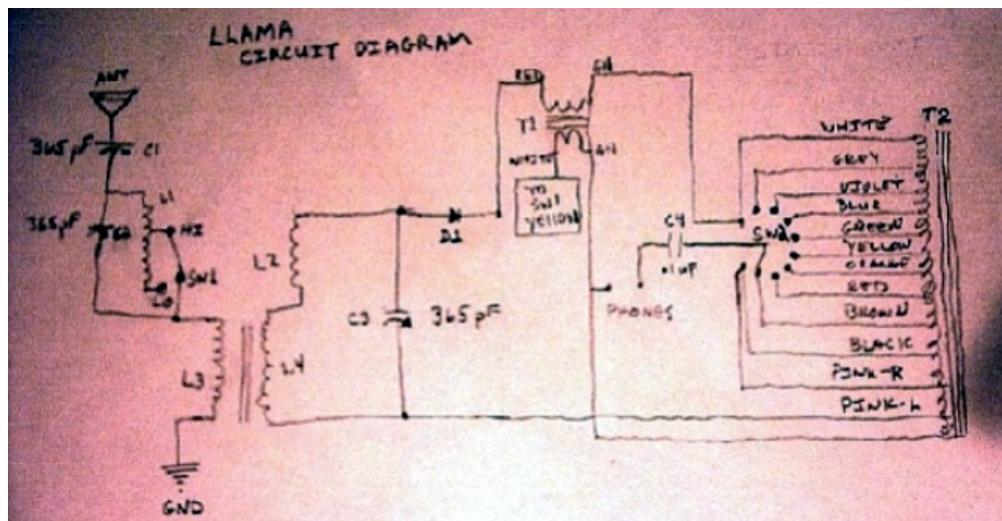
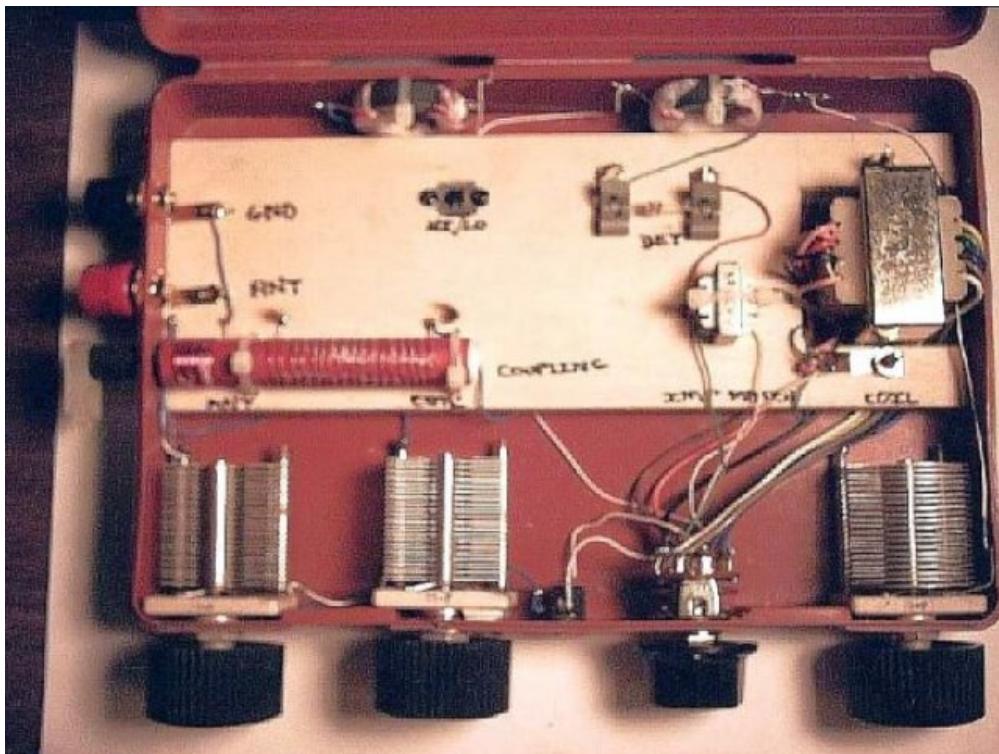


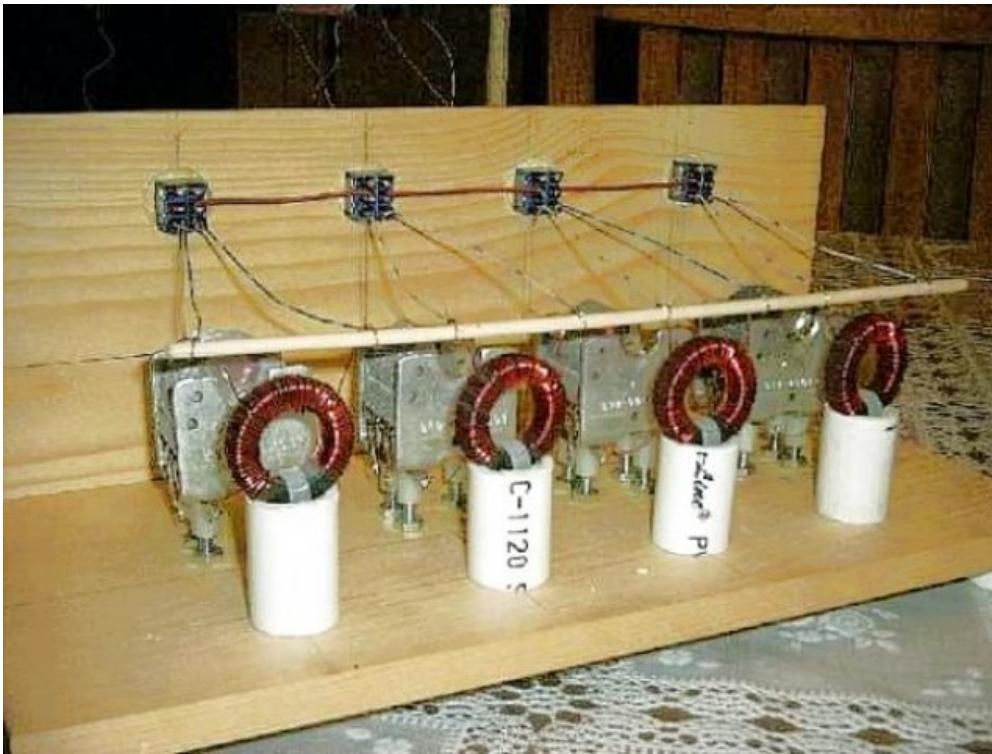
This is my first passive receiver that was not a bread board set. It includes a Tuggle antenna turning unit with 12 gauge enamel wire rook coil, center of the picture, a 1N34 detector with 14 gauge enamel wire rook coil, and a Triad SP 21 300 Hz to 100Kz response output to sound powered head phones.

The unit to the right is an IC detector with an ALD110900A and BOGEN T725 trans- former to the same sound power headphones. The 160 meter flat top dipole is up about 45 feet, plus I use a 50 foot long wire, and a house copper water pipe ground.

I have two locations I can work, my old home place in Tuscaloosa, Alabama in the same shack I've had for over 50 years, and the home I live in now in Hoover, AL. I worked this contest in Hoover, Alabama. This location has very low noise, and after sunset the local blow torches are not a issue. I normally don't use a trap.

Charles Pullen, Open Class and SW Class Entries





This is the same radio I used in the '07 contest, with no additional modifications. I call it the Llama, because of the case it's built in.

The antenna this year was a 40 foot inverted L, about 25 feet above ground. I added two additional ground rods to my ground system this year to compensate for the smaller antenna. I had to make extensive use of the wave traps this time around, the locals at 1080, 820, 770 were totally dominating the middle of the band.



This is a very simple SW loop antenna radio I converted from a QRP 40 meter small transmitting loop I built about 5 years ago, and has been beaten up quite a bit over the years. It consists of a four foot diameter, $\frac{1}{2}$ inch copper loop that is paralleled with a 365 pf air variable capacitor and a 1n34a diode detector.

I hooked it to my copy of Steve Bringhurst's ultimatch unit for impedance matching and listened in with a pair of philmore xtal earplugs in connected with a radio shack mono y-adaptor.

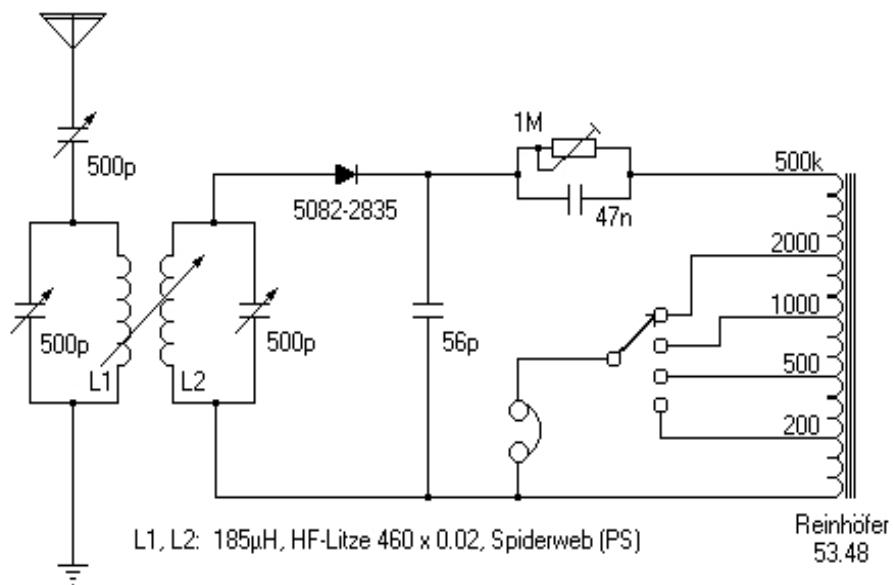
- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

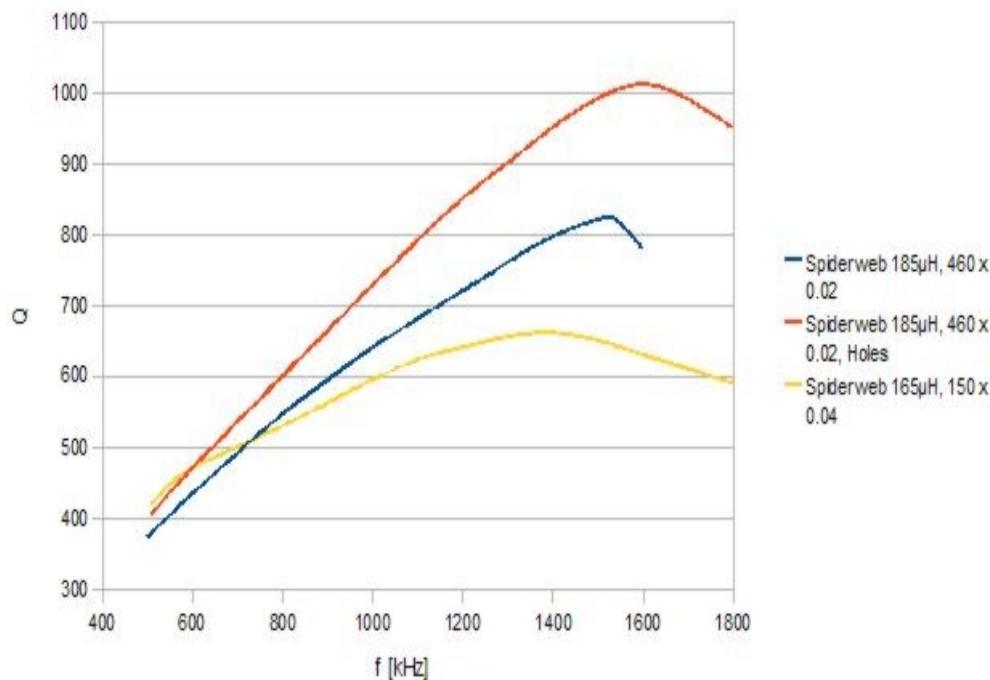
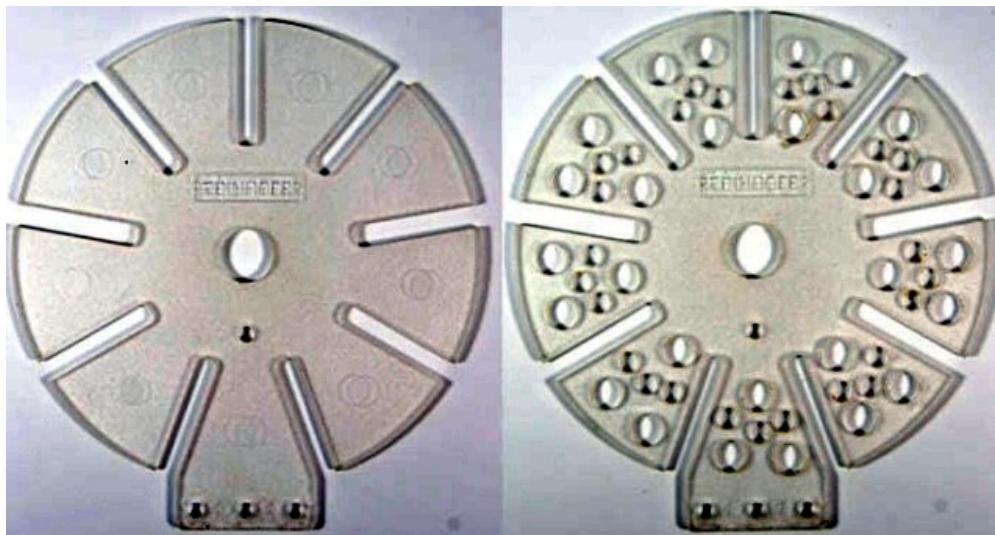
Crystal Radios Of The 2009 Contest Entrants

Page 1

Ralf Siemieniec, Open Class, SW Class, and Below BCB Class Entries







In the (broadcast band/mw) contest, I used my latest receiver which was just finished right in time. The schematic features a double-tuned circuit with an additionally antenna matching cap and probably does not show surprises. The whole device was designed to gain highest Q values within my possibilities. I used polystyrene coilformers of the german manufacturer Reinhöfer which already offers the possibility to gain high Q values.

The coils have $185\mu\text{H}$ and were wound with $460 \times 0.02\text{mm}$ litz wires. Measurements of such a coil show increasing Q with frequency up to 1550kHz and a maximum value of app. 830. A noteworthy improvement was reached by drilling six holes in each segment of the coilformer, now the Q increased across the frequency range of interest (in Europe, station in the mediumwave band cover a range from 531kHz to 1611kHz). Moreover, also a maximum Q of app. 1020 was found. Therefore I decided not to use contra-coils since I wanted to avoid the use of any (more or less lossy) switch in the RF section.

To preserve the high Q, I used TRW silver-plated air variables in the antenna and detector circuit. Coupling of the coils is made variable by a somewhat old-fashioned technique as used in old tube radios. Anyway, it is working very smoothly and reliable.

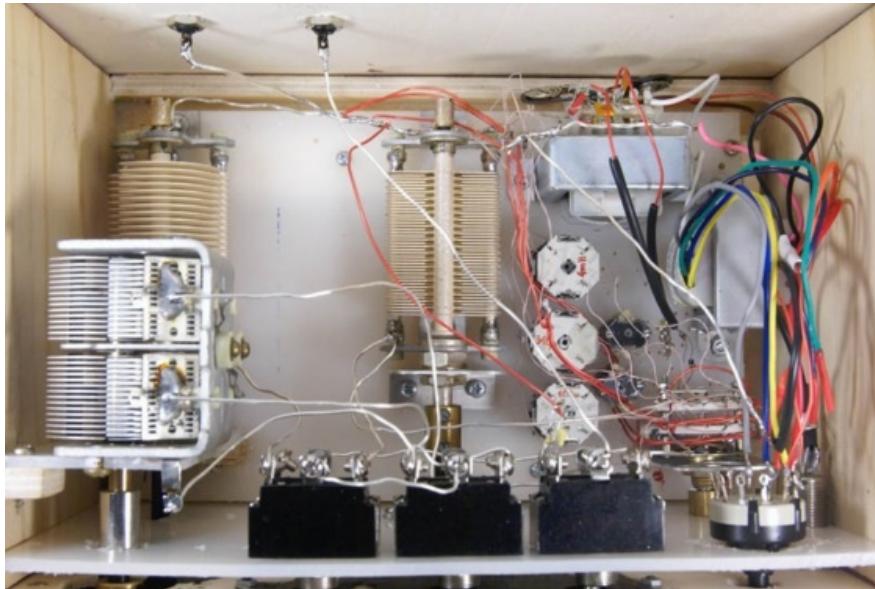
Housing is done by low-loss polypropylene sheets which keeps the Q up (refer the measurements of Dick Kleijer at <http://www.crystal-radio.eu>). In difference to most constructions presented so far, I completely enclosed the device. The main reason is to keep dust away from the caps - if you ever did Q measurements of high-quality aircaps with dust in between the plates, you will understand why. The dust probably kills more Q than the housing might do, providing the use of appropriate materials (thus, no wood, PVC, metal, acryl glas or most colored plastics).

All variable caps are completed by 6:1 vernier dials made by UK Jackson Brothers. 5082-2835 schottky diodes are used as detector diodes and provide the best matching between detector circuit and audio transformer I was able to realize. The matching transformer with an input impedance of 500k was also manufactured by Reinhöfer. The radio is completed by a pair of balanced-armature headphones Baldwin Type C as well as the usual benny circuit.

The real backdraw of my receiver is the limited antenna. I live in a five-storied house which not much chances for long antenna wires. Thus my best option was a 10m wire between my balcony and the roof of the next garage. Compared to my other set which I used in the last sprint contest and still used for the longwave and shortwave band in this year, selectivity and also sensitivity was noteworthy improved. The 6:1 vernier dials are already a minimum requirement, 12:1 or more would be favourable.

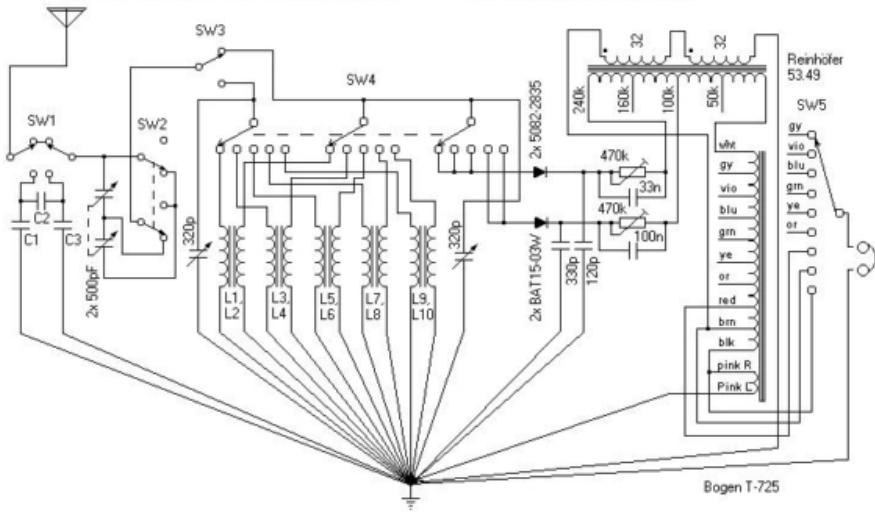
In all, I was surprised about how many and how distant stations I was able to receive during the contest.

Shown below is the set used in this contest for SW and LW. It is the same set used in the 2008 Sprint Contest.



L1, L2: 2x 4000 μ H, Core P18-11 (M33), RF-Litz 80x0.02
 L3, L4: 2x 310 μ H, Core P18-11 (M33), RF-Litz 80x0.02 (2x)
 L5, L6: 2x 100 μ H, Core P18-11 (M33), RF-Litz 80x0.02 (2x)
 L7, L8: 2x 7 μ H, Core RM5 (K1), RF-Litz 80x0.02 (2x)
 L9,L10: 2x 0.8 μ H, Core RM5 (K1), Ag/Cu-Litz AWG24

SW1 - Antenna Volume/Selectivity Selector
 SW2 - Antenna Matching Switch
 SW3 - Single- / Dual-Tune Switch
 SW4 - Band Selector (Lw / MW1 / MW2 / SW1 / SW2)
 SW5 - Headphone Impedance Selector



Dan McGillis, Open Class Entry

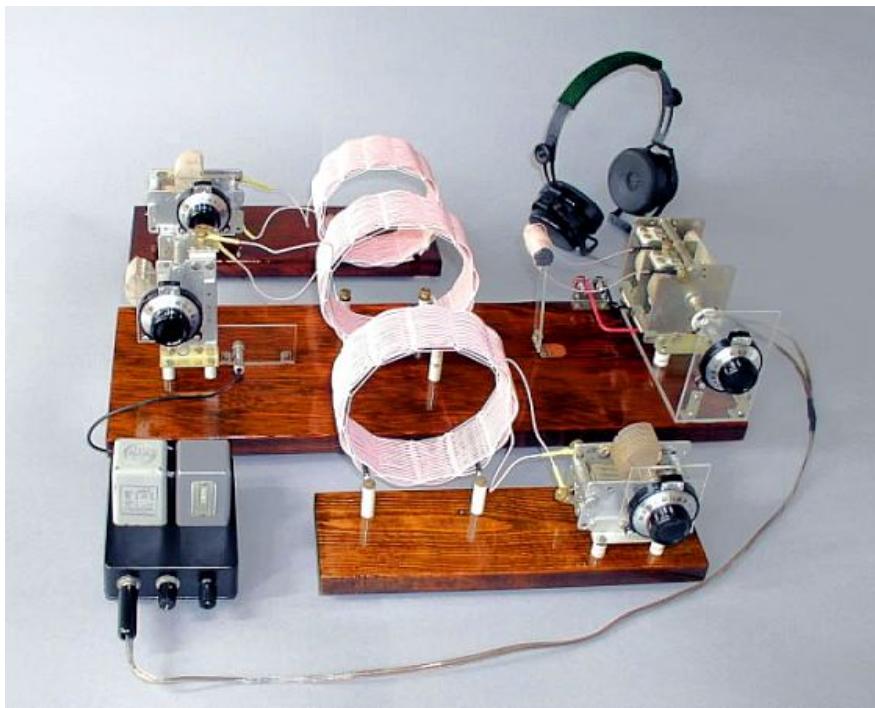


My entry this year is a simple loop-stick crystal set - something the grandkids can play with. It's been described at the [RadioBoard](#).

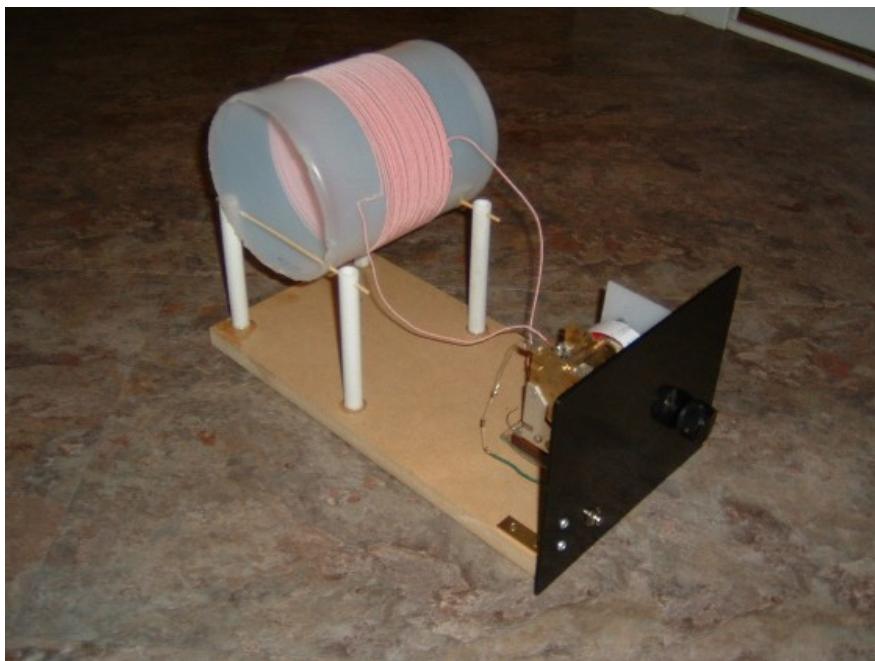
I used a little antenna tuner that's also been described before. Click [here](#) for the RadioBoard link for the tuner.

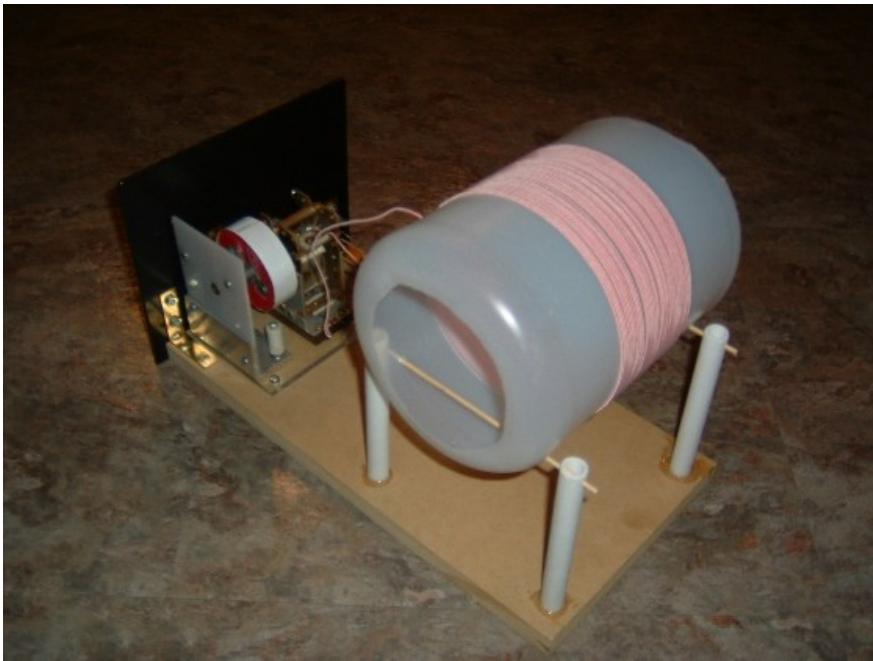
The set didn't do too bad for only a few days of listening. A big 200' antenna certainly helps :-) It makes a nice progressive set. I started out using Mike Peebles's cat's whisker detector stand. It's very smooth & works well. Substituting a FO-215 diode perked things up. Adding a Bogen+Benny for some audio matching made a big difference. Coupling-in a simple antenna tuner really brings-in the DX and kills the SW ghosts.

Mike Tuggle, Lyonodyne-17, Open Class Entry



This year's effort was something of a disaster. The night before the start, our annual Kona winds blew the antenna into the mango tree and ripped it to shreds. I spent opening day out in wind and rain, in true ham fashion, getting the antenna down and re-erecting a simple longwire in its place. Conditions throughout the contest were blah. I don't know whether the original 4-wire flat-top was really that much better, or if conditions were simply that blah.

Jack Bryant, Open Class, Two-Way Shortwave Class, and Below BCB Class Entries



I only worked the first 24 hours of the contest on the broadcast band. I had copied one navigational beacon at 529 kHz, and decided to build a simple set for LF. I copied four more stations for a total of five. The stations are: DIW, CLB, BH, YYW, and LYQ.

I worked a few contacts on 75m AM using the xtal set as a receiver. My transmitter VFO had bitten the dust, but I got a crystal for the transmitter on Saturday, and that worked fine.

I used essentially the same set for the broad cast band that I used in years past, with minor mods to the antenna tuner. I did use Schottky diodes for the fist time. I used two in parallel during the day, but moved to just one at night due to the overload I experienced using the pair.

This year I used a different set of phones made from SP mic elements. The earphones were made of hard plastic, but the headset band placed the phones on the back part of my ears. I did not experience the ear pain of previous years, but I made sure to move my glasses far up on my head, or not use them at all to eliminate pinching the nerve beside my ear.

I have used a Realistic DX-398 for several previous contests, and I used it for this one, too. I used a PC for logging along with paper copy backup. I used a four foot table from Lowe's as my listening post.

[Continued on Page 2.](#)



Select Menu

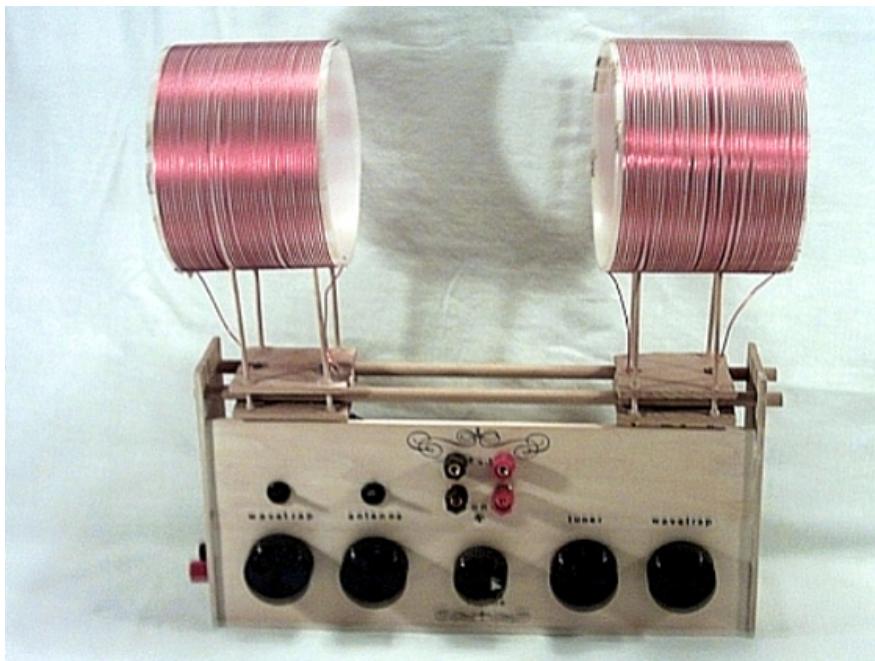
- [Home](#)
- [About Us](#)
- [Contest Results](#)
- [IAD Contests](#)
- [IAD Entries](#)
- [Antenna Matching](#)
- [Antennas](#)
- [BHAM Radios](#)
- [Crystal Contests](#)
- [Crystal Radio Entries](#)
- [Sprint Contest](#)
- [Headphones](#)
- [Projects, Mods](#)
- [Favorite Links](#)

- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

Crystal Radios Of The 2005 Contest Entrants

Page 1

Charles Pullen (Chuckster)



Basic Double Tuned Set

The antenna coil is a 5.5 inch space wound with 16awg @ 240uh paralleled with a 20-340pf air variable, loosely coupled to a 5.5 inch space wound with 16awg @ 270uh paralleled with a 20-340pf air variable detector coil. The detector used was two 1ss98 schottky diodes in parallel. I Used the original ultimatch circuit by Steve Bringhurst for impedance matching. Used two Philmore xtal earbuds in parallel, connected to the ultimatch with a radio shack mono Y-adaptor.

The lone wave trap is a 4" x 3/8 inch ferrite rod wrapped with litz to obtain 270uH with a parallel 20-340pf air variable. This was arranged so it could be loosely coupled to the detector coil, suspended inside the center of the detector coil or outside the detector coil in axis with its center, or rotated 180 degrees out of the way. I found this particular style of wave trap to be extremely effective for even the strongest local.

The antenna was two separate wires, one 50 foot wire tacked to the ceiling running about 30 feet east-west the remaining twenty feet running north & south. The second antenna wire was a portable reel of 25 feet borrowed from my Grundig YB and attached to the set. This is in a second story apt. Ground was about 25 feet of speaker wire running to a CWP.

Dave Schmarder



See complete description of Dave's radio at this link: [Dave's #50 Set](#)

Open Class

Dual 660/46 litz coils and two tuning capacitors.
differential coupling capacitor
Schottky Diode Detector
Sound powered headphones
Antenna 40 meter wire up 3 - 4 meters running east to west.



33 inches (84 cm) per side. FO-215 Detector, Bogen transformer, Sound powered phones

See the details of this loop at [Dave's Loops Page](#).

Bill Meacham (Exray)



This set is my third generation of a model based on Steve Bringhurst's TK-2 toroidal set. I went with an external detector coil on this one which offers the advantage of being able to close-couple an external trap (not shown) to the detector coil to notch out instances of interference when the coil itself is picking up local signals via the air.

The set is built on a Garolite front panel with custom-made decals and lacquered for durability and shine. All of the RF components are on standoffs to avoid any possible leakage path through the panel. Vintage tuning capacitors were used and they have been thoroughly cleaned and checked for rf integrity. Both are straightline tuning types to minimize crowding at the high end of the band.. The input tuner is of the "Tuggle" type and uses a toroidal inductor. The inline wavetrap also uses a toroid. The detector uses a nice Pilot Kilograd tuning cap and a coil of 165-strand litz wound on a Lexan former. Its Q is greater than 500 across most of the band. Detector is a germanium FO-215 and the set uses a Calrad output transformer with an adjustable AF impedance matching control (benny) for minimizing distortion on strong local stations. I have been using the set with sound powered phones and they match well.

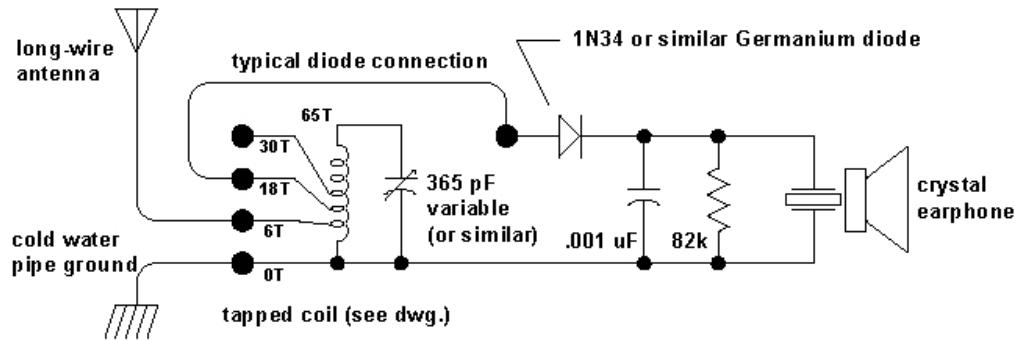
Calibration on this set is very accurate and it's easily resettable to locate particular stations. I added a set of front panel terminal posts to allow for tinkering with other detector tank options. The coil mounting assembly on top is also configured in this fashion to allow experimentation with other coils. Ceramic standoffs and feedthru bushings were incorporated to assure minimal losses.

Cabinet is homemade, made with Baltic Birch and is stained and lacquered using clear and toned lacquer.

Ed Phelps



.. is the same 140 ft, base insulated, vertical I used last year. (picture is crooked, not the tower)



Crystal radio with typical connections for a long wire antenna and good ground connections. The diode is connected for weak signals and moderate selectivity.

I made a few minor changes to this circuit. In place of the 1000 pf capacitor, I use 250 pf. The 82k resistor, I changed to 100k. I use a pair of ceramic earphones, wired in series.

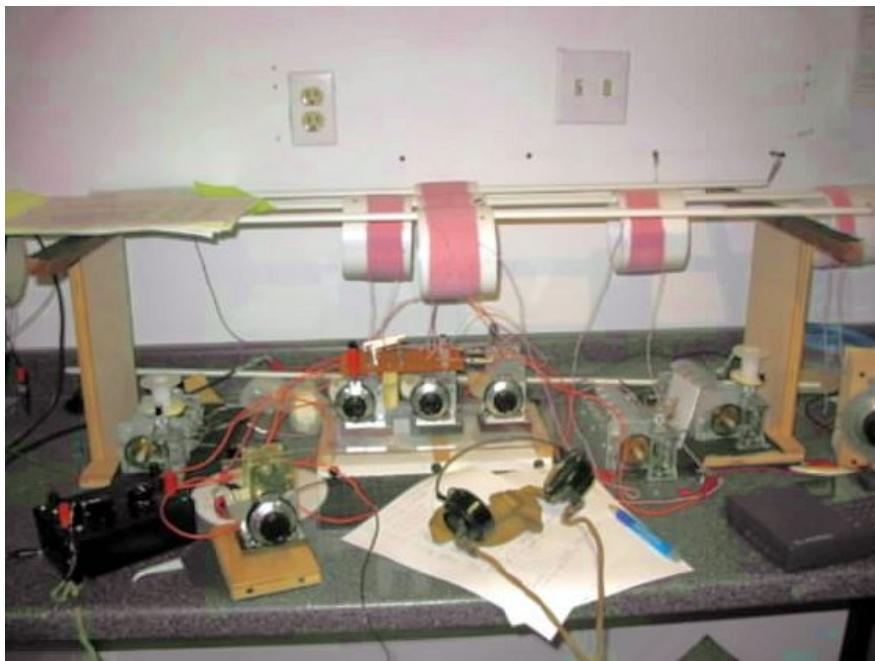
Eric Haydon



The contest this year was a lot of fun. I put in many many hours of listening. The band was very up and down in Nebraska. Thursday and Friday nights were the only nights that I would call "normal". The unusual conditions on the other nights did however allow for the reception of a few stations that I had never heard before on my crystal radio. I probably heard at least 30 more Spanish speaking stations than I logged. I only logged the ones that were very strong or heard almost every night.

I heard many more stations this year than last year due to several improvements that I have made to my listening station. I used the same crystal radio as last year with the following improvements. My antenna is now higher and has been extended to about 240 feet in length. My ground system is improved. I was lucky enough last summer to acquire a pair of RCA "big can" headphones in very nice condition. They do help some. I finally built some filters that work very well to trap strong local stations. This allows me to now receive quite a few new stations on frequencies close to my local stations. The last improvement > is that every year I get "smarter".

Gil Stacy



Set: Same set as last year.

Headset: RCA Big Cans tuned and recharged by Steve Bringhurst.

Antennas: 88' top loaded vertical up 50' and 180' inverted "U" up 50'.

Ground is the post 2004 DX contest ground described at the bottom of
[this page](#)

Jack Bryant



I used the 2004 BCB Contest set again this year. We moved after the last contest, so the antennas, ground system, and location were different.

I used two antennas. There first was a top loaded vertical. The top section is about 110' long and is a 80M - 10M trap dipole. The antenna is up about 50' high. The coax feed line is used as the feeder.

The second antenna is an upside down U, roughly 40' vertical on each end, 260' horizontal. I feed it with ladderline in the horizontal section, about 20' from where one end goes vertical. This makes it about 60' from one end of the wire. The antenna was used in three different configurations:

- 1) Each bottom vertical run is grounded. This is the grounded loop configuration.
- 2) Only the end closest to the feedline is grounded. This is similar to an inverted L approach
- 3) No ends are grounded. This is similar to an off-center fed dipole. All changes were done manually (no switches or relays yet).

[Continued on Page 2.](#)

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- [Home](#)
- [About Us](#)
- [Contest Results](#)
- [IAD Contests](#)
- [IAD Entries](#)
- [Antenna Matching](#)
- [Antennas](#)
- [BHAM Radios](#)
- [Crystal Contests](#)
- [Crystal Radio Entries](#)
- [Sprint Contest](#)
- [Headphones](#)
- [Projects, Mods](#)
- [Favorite Links](#)
- [Contact Jack](#)

Sub Pages

- [Main Page](#)
- [2004 Page 1](#)

- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

Crystal Radios Of The 2004 Contest Entrants

Page 1

Lou Dayich



I have attached a photo of the set that I used during the contest. Daryll Boyd posted a picture on his site. I humorously called it "The Bondini". The most interesting feature is that this uses 4 inch basket weave coils with 9 points- double tuned.

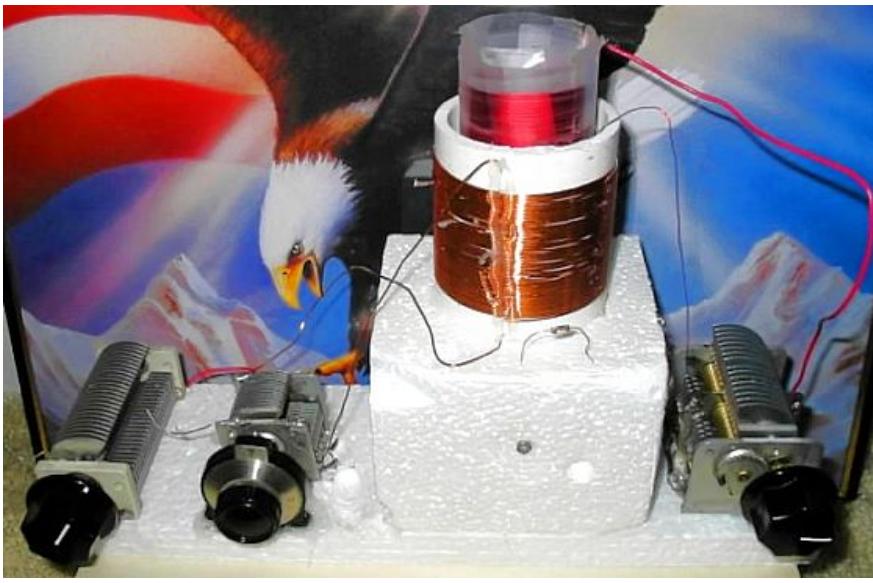
The wire is 2 solid strands of twisted wire. I use a schottky diode and sp phones with a Bogen matching transformer. I wired it in as many combinations of coil and cap as time would permit.

Bob Jewell



Here is Bob's DX set.

Alex Perez



Hobby Class Single Tuned Crystal Radio Capable Of DX My antenna consists of 70 feet of 18 gauge plastic insulated tinned copper wire oriented in a North East and South West direction with the lead in pointing North East. The far end is elevated over 40 feet while the other is only 12 feet high. A cold water pipe ground connects to the receiver via 15 feet of insulated 14 gauge solid copper wire.

A 250pF ceramic frame air variable capacitor couples the antenna to the receiver. The tank circuit is composed of a 365pF phenolic insulated air variable capacitor and a coil of 60 turns of 21 gauge wire wound on a 2 $\frac{3}{4}$ inch PVC form. It is tapped at 30, 40, and 50 turns from the ground end.

To combat the QRM generated by WXEM, only a mile away, the wave trap has to be closely coupled to the tank circuit. The trap is composed of a 250pF phenolic insulated air variable capacitor in parallel with a 60 turn coil of 26 gauge wire on a one inch diameter form.

Best sensitivity and selectivity is obtained with the 30 turn tap. Usually a single Philmore crystal earphone and a selected germanium diode were employed. Some improvement was noticed when using two earphones in series, probably a better impedance match.

I attribute my success with such basic equipment to mostly quiet RF environment, many hours spent DXing, and listening well into the night and the morning on one occasion. Furthermore, I was fortunate to acquire some high scoring stations. Somehow I heard two different stations on 630 25 minutes apart. WAVU was only 203 kilometers away but running a mere 28 Watts! Still, this does not compare to KEYH on 850. It was 1,211

kilometers away and transmitting at a power of just 185 Watts! The remaining acquisitions were locals, 50 KW Clear Channel, or not too distant 5 and 1 KW stations. I received one Canadian and one Cuban station, both 50 KW. The furthest catch was WBZ, Boston. A station on 1260 identified itself as Radio Disney but I was unable to obtain a call sign. Out of three possible candidates, I am fairly sure it was WWMK. Using a spotter set to ascertain direction, the station was either from Chicago or Cleveland, certainly not Boston. 5,000 Watt DX from 800 kilometers away is certainly not uncommon for me, but anything else would be. Besides, I did log a few stations running 5,000 Watts from Ohio.

Alex Perez
KG4IHN
Age 15

Evan Haydon

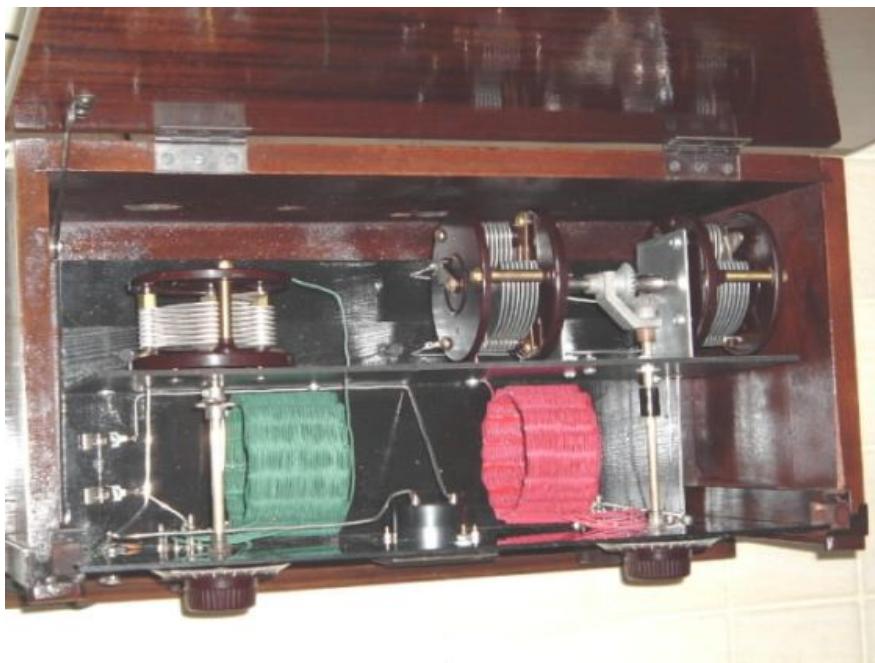


My crystal radio is a design that has evolved after many years of searching for a good design. Most of the ideas used in this radio came from internet sites. No litz wire here. Just old cotton covered 20 gauge wire wound in a basket weave form. No sound powered headphones here. Just my trusty old magnetic Trimm Dependable's.

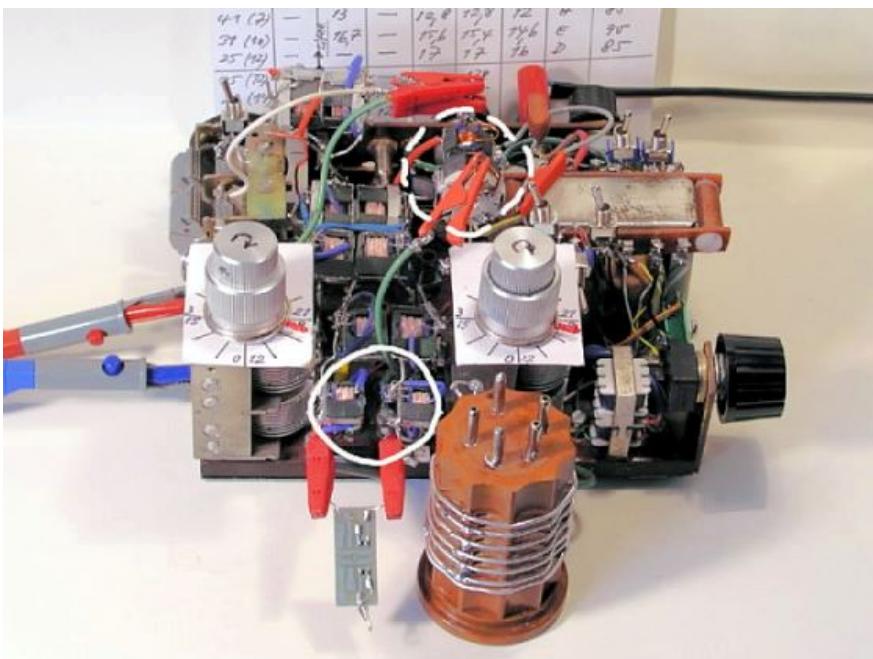
Yes, the meter is in the circuit all the time. It is a 50 μ A movement in series with the headphones. It is helpful in maximizing design of the circuits, selecting the best crystal to use, and in tuning taps and caps for maximum signal reception. It indicates carrier strength of the received signal. The carrier contributes nothing to the audio heard in the headphones. A signal of 1ua is 100% readable. One local station gives a reading of about 500 ua.

My antenna is 18 gauge solid magnet wire. It is basically a Windom antenna that is insulated at the supports which are at the ends and at the lead-in point. It is 180 feet long and runs due east and west. The wire to the receiver comes off at a point about 60 feet from the west end and is about 55 feet long. The lead-in take off point is up 36 feet with the ends up about 24 feet.

The radio is made in a 20's battery radio wood cabinet. It uses three Atwater Kent variable capacitors. It uses Atwater Kent knobs with two sets of antique switch points mounted on a black plastic front panel. Genuine Atwater Kent copper emblem at the center top of the front panel. Antique connectors are on the front panel for antenna and headphone connections. Wiring inside is all by 16 gauge bus bar. 1N34A diode. The primary and secondary coils are 4 1/2 inches apart with no electrical connection between them. I have not found a trap circuit that helps enough to talk about.



Berthold Bosch



2004 XSS DX Contest Information (SW, Open Class)

My 2004 contest log containing 156 SW stations (incl. 5 of uncertain ID) suggests that conditions in Central Europe are still more different from those in the USA than on the MW band. There are a lot of high-power SW/BC stations of 100 to 1000 kW in the numerous European countries and the neighbour areas, and particular networks that operate on rather many frequencies - like R.Free Europe, R. Liberty, VoAmerica (partly R.Sawa), VoRussia, etc. with their various programs. It is mostly possible to ID the received stations of these networks, but often difficult to determine the site (country) from which the particular tx operates. Only a few real DX stations are in my log with China/Peking being the most distant one (9500 km). So, is it really fair to compare my results with those obtained e.g. in the US if one gets one point, also for every "nearby" SW station?

I used my 2003 contest set (see Wuggy's 2003 Contest site) which I extended for SW reception. This consisted in installing an air coil of 4 uH (fore in photo) for the 13m and 16m bands, a pair of Epcos pot cores of SW material K1 with solid-wire coils of 5.5 uH for 19m to 25m (marked by broken circle), and pot cores with 45/46 Litz coils of 10 uH for the 31m to 75m bands (full circle). Except for the air-coil tank I generally employ double tuning. The principal circuit layout for SW is the same as in the 2003 set (Ben Tongue approach). With the 5 SW coils there are now in total 13 coils in the set (LW, 3*MW, 3*SW), not counting those provided for triple tuning on extra boards (Boschodyne Plus).

At SW frequencies the obtainable tank resonance resistances are much lower than those at MW. Consequently sensitivity is a serious problem, and more often than on MW one hears two or even three stations at the same time. For improving the situation I employed a modified MFJ tuner 901B in front of the set (not shown in photo) to squeeze the last dB of power out of the antenna and trade it for selectivity. The tuner can be wired to act as a SPC or SL pre-selector, an "ultimate transmatch", or a capacitively-coupled third tank circuit (for triple tuning). With triple tuning I measured for example at 41m a loaded (i.e. with A/G and phones connected) -3dB bandwidth of 23 kHz and a -10dB b.w. of 47 kHz. -- I use a Schottky diode BAT 62 (as in photo) if high sensitivity is the prime goal, and 2 or 3 paralleled 5082-2835 if it is selectivity. The outdoor loop that I described last year in my contest report served as antenna.

For finding and then logging stations I employed two methods:

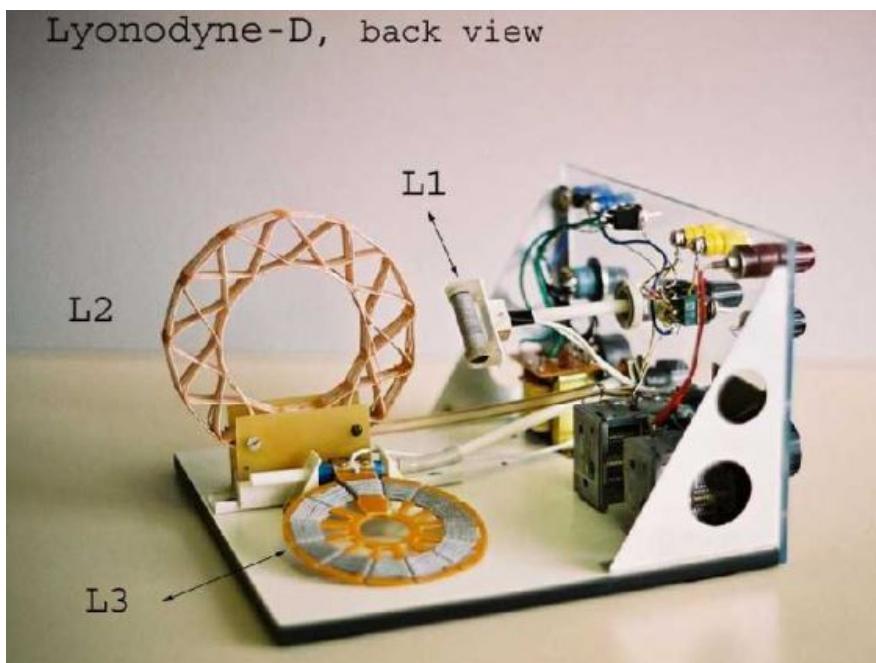
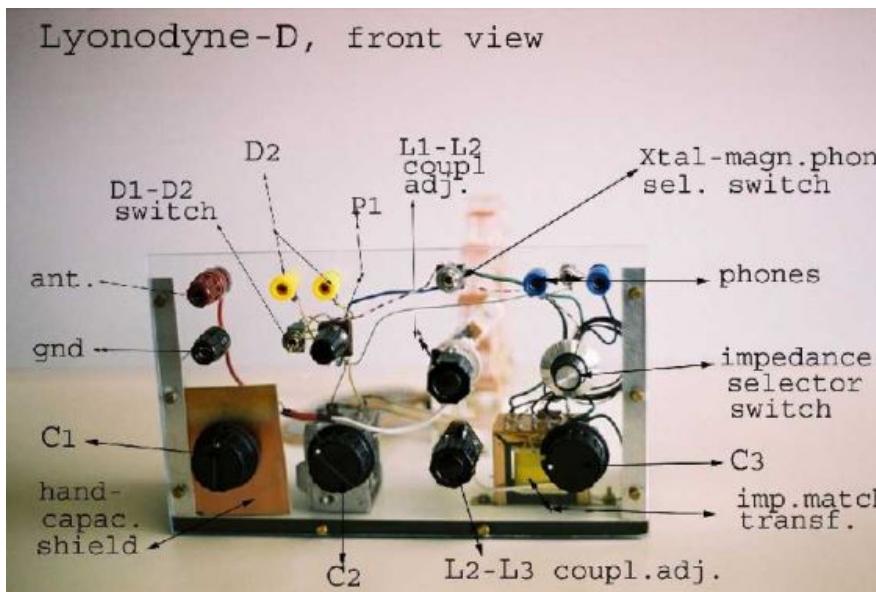
(1) First I scanned the band with my spotter radio ATS-404. When the scan had come to stop at a station, I tuned the xtal set to the particular frequency with the help of a loosely-coupled signal generator. After turning off the signal generator I then listened if I could hear that station in the SP phones of my set.

(2) When I had the xtal set tuned-up to a particular frequency within the SW band investigated, I slowly moved the sig. generator about 50 to 70 kHz around this frequency while watching for beat notes. When I found a strong beat I tuned the set to zero this beat, then turned off the signal generator, and listened whether I could hear the particular station. This was done repeatedly to scan various parts of the band. If I had been able to definitely hear the station in methods (a) or (b) I partly switched-on the spotter radio again for helping to identify the station received on the xtal set.

During this concentrated listening on SW, I found the rule of thumb again confirmed that Mike Tuggle formulated in a recent paper: "If you can hear them on a radio, you can hear them on a crystal set" - nearly always in my case.

Berthold Bosch

Dejan Momirov



2004 DX CONTEST SET DESCRIPTION

This is basically a Lyonodyne with some differences, such as:

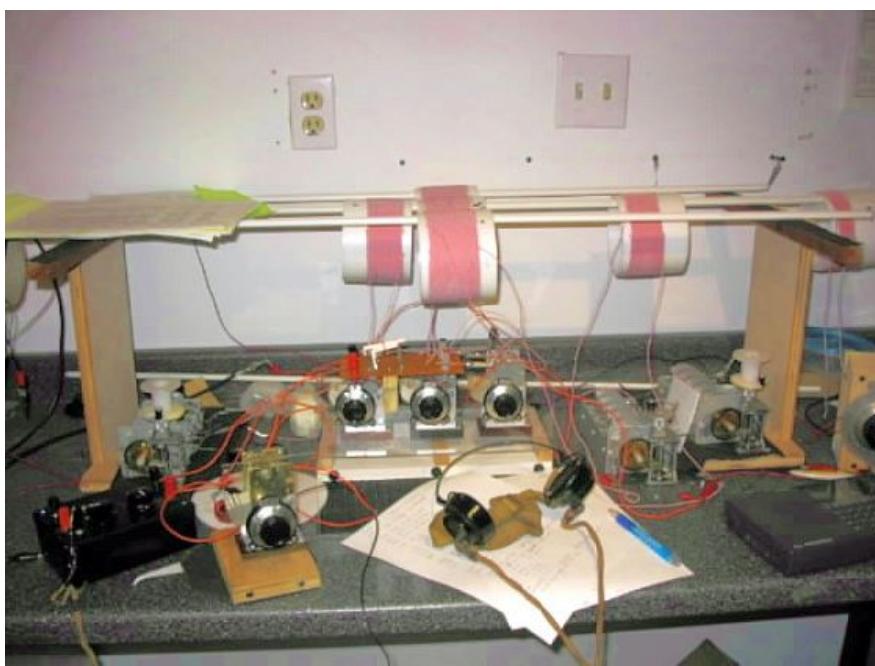
1. The complete set has been built on one chassis and all controls are at the front panel.
2. The C1-C2 coupling is double: by means of rotation and changing the distance, and wave-trap is coupled only by rotation.
3. Using one or both sections of the C2 spreads the upper BCB.
4. There is one built-in detector diode with the possibility to experiment with other types of detectors.
5. Audio transformer is home-made and together with the impedance-selection switch allows the use of different impedance headphones, as well as a sensitive speaker.

I am aware of all the imperfections which are subject to experimental improvements. I want to thank Mike Tuggle who invited me to join the Contest and gave me many useful advice. My gratitude also goes to Ben Tongue for helping me to improve my impedance-matching transformer.

N.B.: The switch s1 is not shown on the photo (introduced after the photo was taken!).

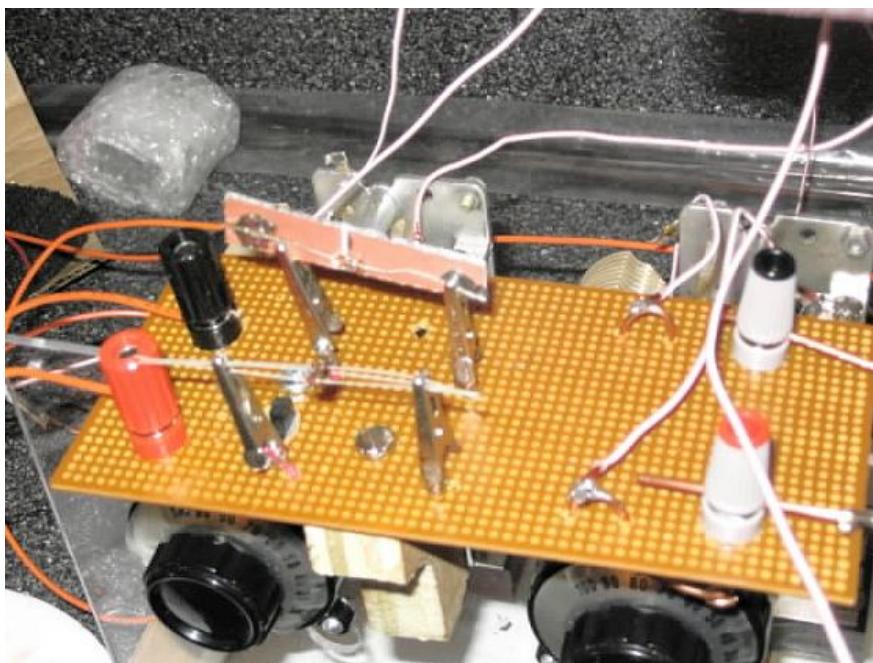


Gil Stacy



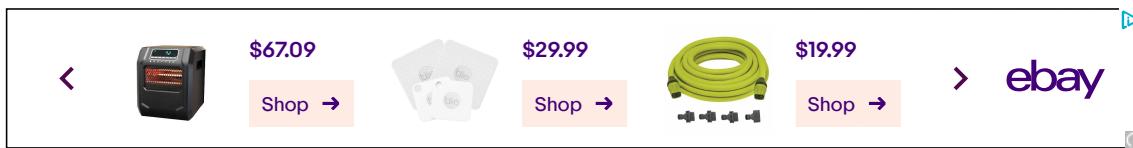
Five Litz 4.5" O.D. coils are in use at all times. The detector and antenna coils are controlled by the three 8-1 vernier dials mounted in plexiglass. The antenna circuit is a modified Tuggle front end approach with one TRW cap (C1) in series with the antenna with C1's stator linked to C2's stator. C2 is tied to the antenna coil and earth ground. C3 is tied to the detector tank. All caps are TRW's previously available from Fair Radio. This offers the set more flexibility in tuning than its previous traditional Tuffle Front end which used a dual ganged cap.

The three inductive traps surrounding the detector tank are driven by one gang each of three five ganged traps with right angled 120-1 drives from Fair Radio. Hand capacitance is controlled by use of empty plastic wire spools, slotted to accept the dials of the right-angled drives. The stand-alone TRW cap with vernier dial controls the inline toroid trap. The three inductive traps are permanently set to trap locals 1400, 1290 and 1230. The inline trap is used trap two local stations at 630 and 900 when in their vicinities. Otherwise it is used to assist swatting down 1230. Untrapped, 1400, 1290, and 1230 will show up all over the band because of their proximity to my location. The phones are DLR5s matched to the set via an STM designed by Steve Bringhurst. The set uses 3 paralleled Agilent 5082-2835s and a 3RT 12101 which are selected via a switch. To the right of the set is my frequency spotter Radio Shack DX 398. The antenna is an end fed wire, approximately 140' long, with a 90' horizontal run, up 50 feet. A post-contest improvement by adding three 8' copper-plated ground rods to existing water main ground has noticeably improved selectivity, sensitivity and my ability to control the qrm of locals 1230, 1290 and 1400. The new ground system has also opened up about 150 KHz previously lost to the above three locals.



Detector Board

[Continued on Page 2.](#)



Select Menu

- [Home](#)
- [About Us](#)
- [Contest Results](#)
- [1AD Contests](#)
- [1AD Entries](#)
- [Antenna Matching](#)
- [Antennas](#)
- [BHAM Radios](#)
- [Crystal Contests](#)
- [Crystal Radio Entries](#)
- [Sprint Contest](#)
- [Headphones](#)
- [Projects, Mods](#)
- [Favorite Links](#)
- [Contact Jack](#)

Sub Pages

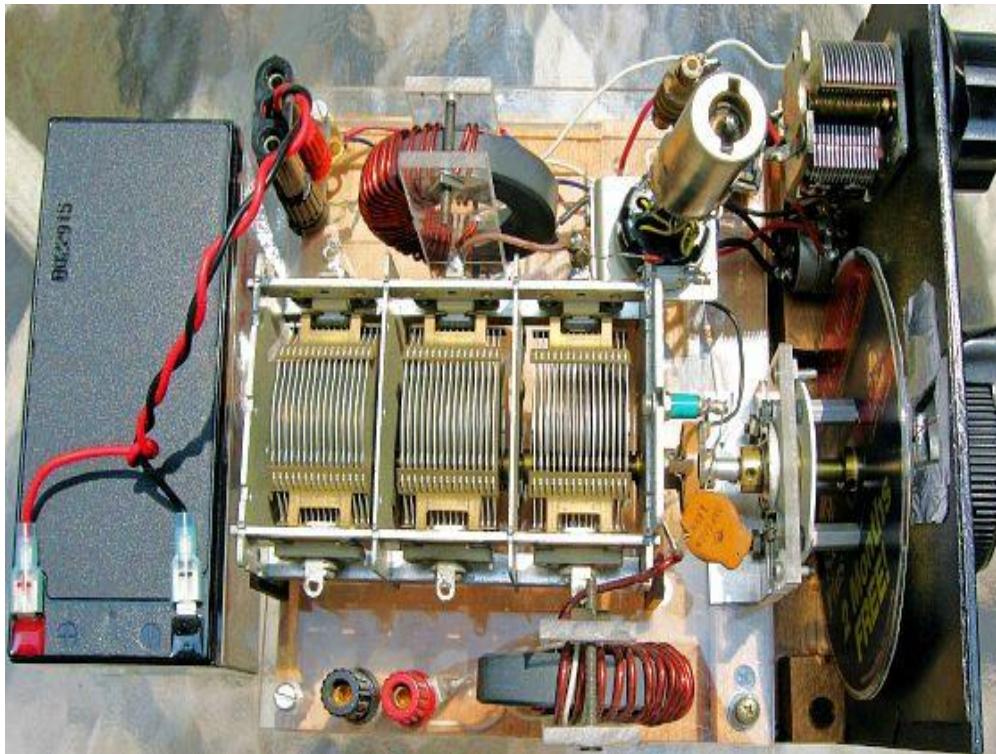
- [Main Page](#)
- [2004 Page 1](#)
- [2004 Page 2](#)
- [2004 Page 3](#)
- [2005 Page 1](#)
- [2005 Page 2](#)
- [2006 Page 1](#)
- [2006 Page 2](#)
- [2006 Page 3](#)
- [2007 Page 1](#)
- [2007 Page 2](#)
- [2007 Page 3](#)

- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

Crystal Radios Of The 2009 (Sprint) Contest Entrants

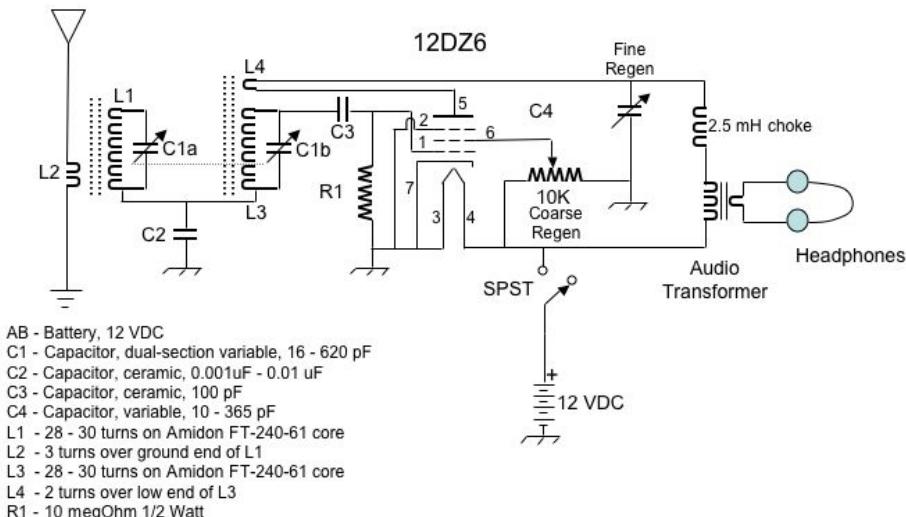
Page 6

Lem Morrison, BCB Class (regen)

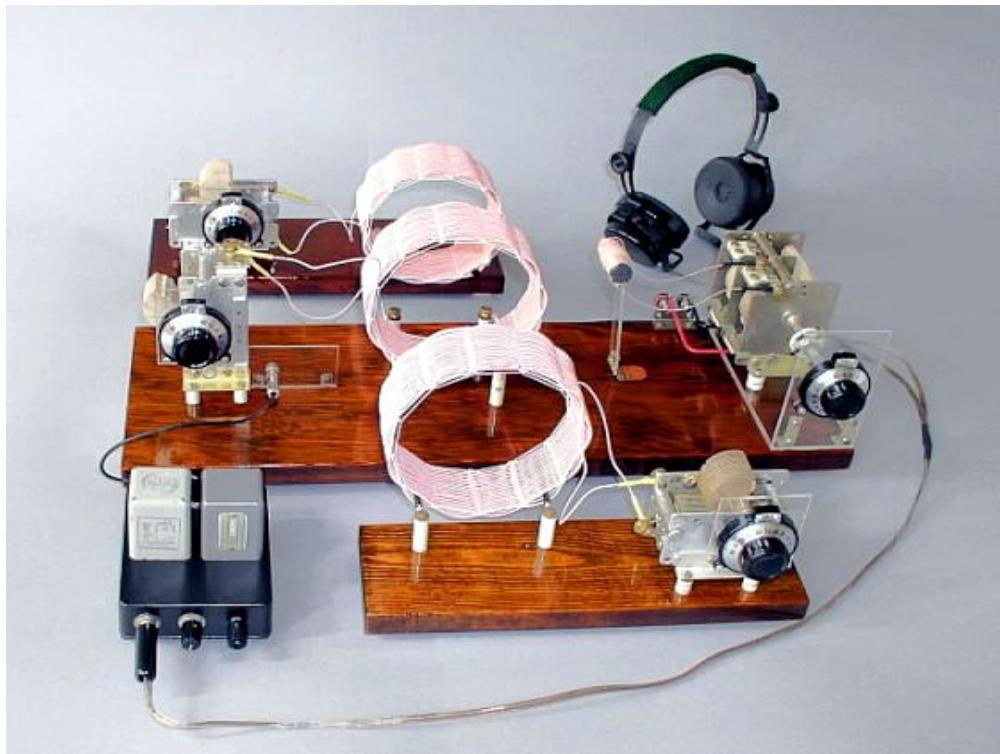


My receiver was a homebrew Regen using 12DZ6 in double-tuned circuit, coax-fed T antenna.

N4AHJ ONE-TUBE (12DZ6) REGEN SET

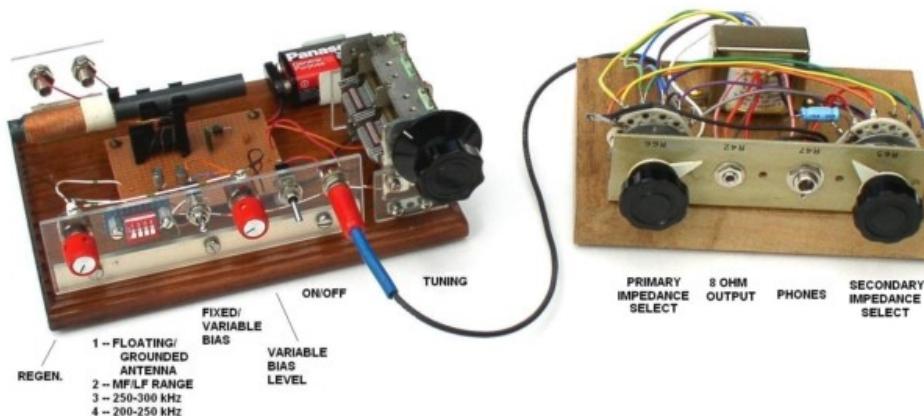


Mike Tuggle, BCB Class (crystal)

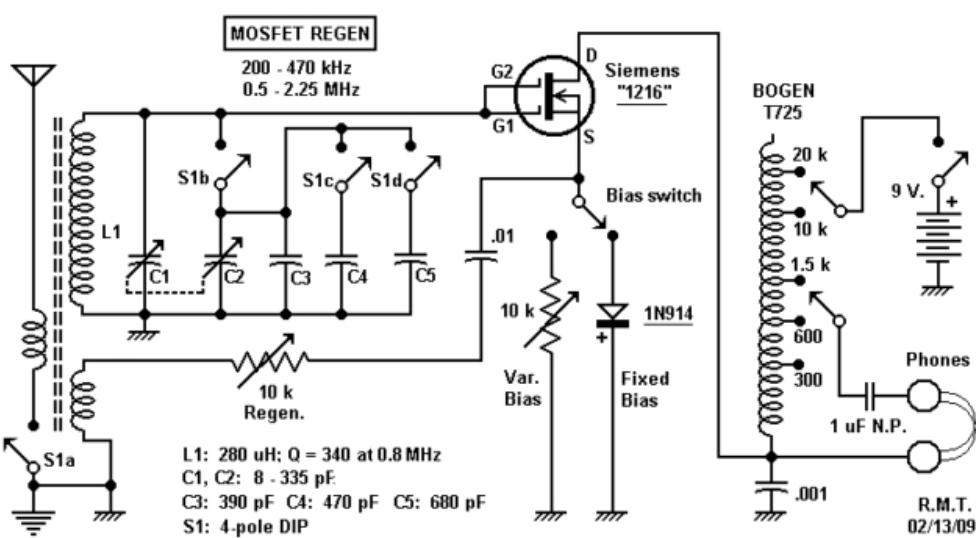


Lyonodyne-17, double-tuned, 12101 3RT detector, two wave traps, RCA Big Cans

Mike Tuggle, Below BCB Class (regen)



Set is same as used in 2009 1AD Contest.



Jack Ivey, BCB Class (crystal)

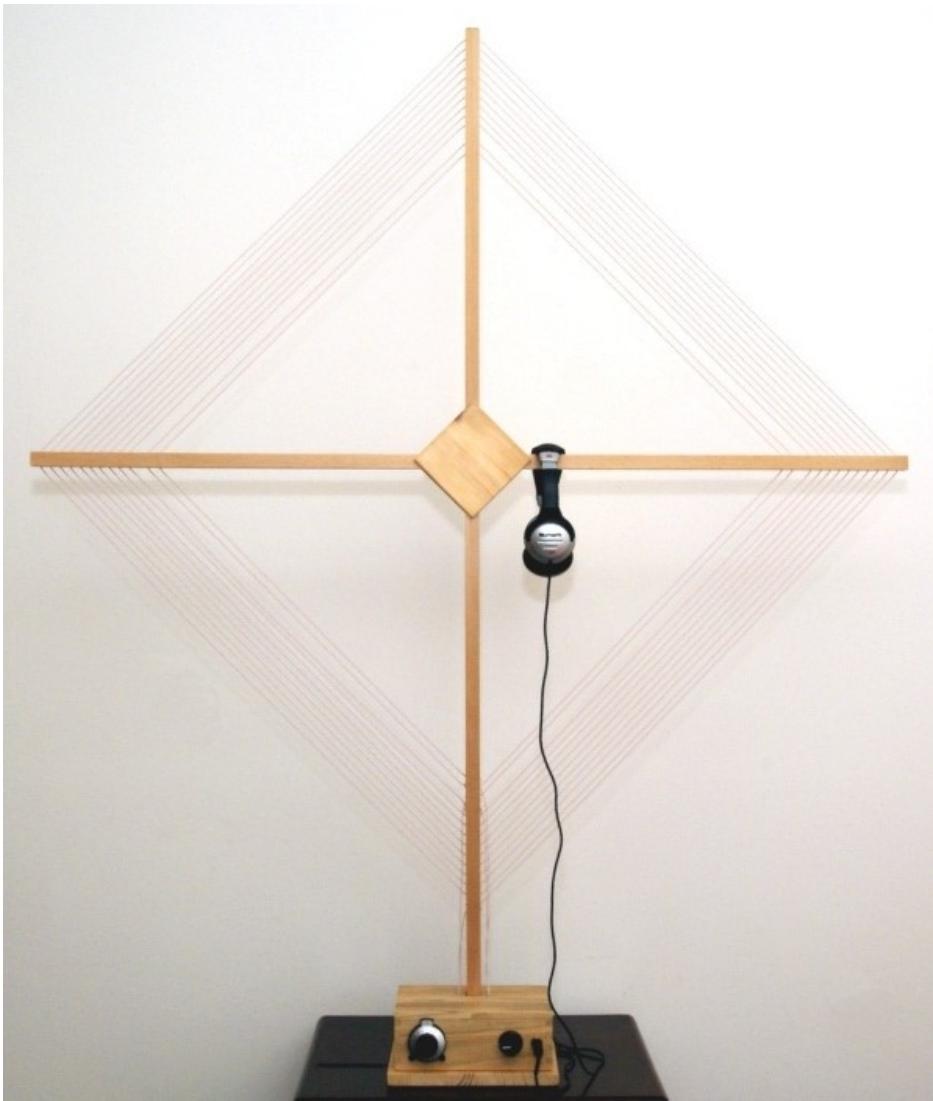
Equipment is a dual-tuned radio with spider coils of 175/46, Ge diode detector, Bogen matching transformer, modified balanced armature headphones, with a 250 foot C-shaped antenna about 8 feet above ground, #14 wire.

Kevin Norton, BCB Class (crystal)

Receiver was the "Crystal Commando". This set is a three coil Toggle set w/cotton basket weaves. The det coil has ceramic var cap, all others are bakelite. Det. was FO215, w/ series crystal earphones. This set played VERY sharp at times . It can tune the upper part of the band in a wiper less configuration. Despite it's simple design I think the reason it worked so well was due to care in construction (i.e., component spacing and insulation). I wanted to take a step back from big litz and just see how well a simple set could be made to work.

Overall I quite happy with this set.

Ralf 'Brösel' Siemieniec, BCB Class (crystal)

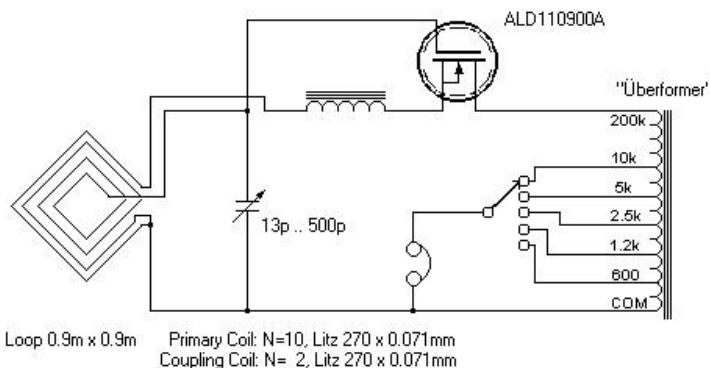
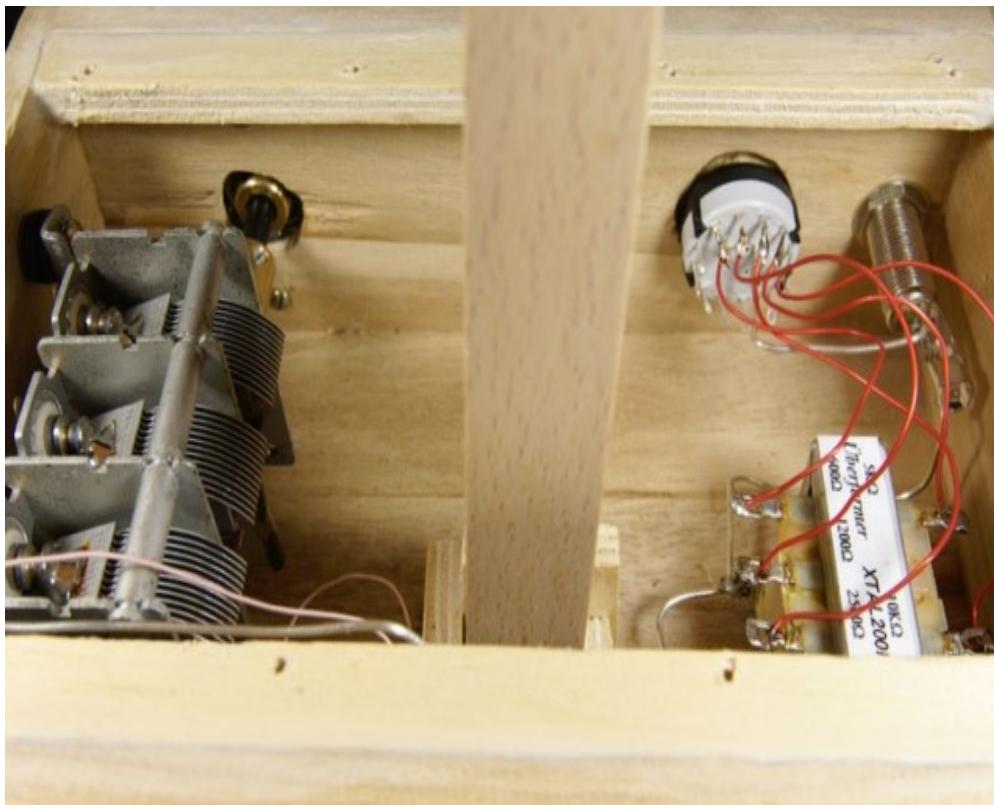


For this years sprint contest I was curious about how my reworked loop antenna crystal radio performs. For this loop having a spiral loop design, I increased the size to 0.9m x 0.9m. Since the litz wire used before (150 x 0.04 mm) was not that much rugged, I switched to a double silk-covered 270 x 0.071 mm litz wire with an outside diameter of about 2mm. The air variable is a good quality three-ganged device with ceramic insulators, but just one gang is used. Tuning is done with help of a 9:1 vernier dial which is coupled by a plastic extension to the shaft of the variable cap. The air variable cap is isolated against the wooden box while the box itself is mounted head-down on a wooden base. The loop construction is also attached to the base although mounting all things together is a bit more difficult this way.

In difference to all loop antenna sets I know so far I decided to use one of the zero-voltage MOSFETs (ALD110900). The gate is directly connected to the hot end of the tank circuit; the only problem left was how to feed the source. There are basically two possibilities – connect the source via a capacitor or via a coupling coil. After making a simple spice model of the measured characteristics of the MOSFET and doing a number of Pspice simulations I found it is more advantageous to use a coupling coil. After finishing the radio I found that there were some annoying FM ghosts which are probably caught by the coupling loop. To get rid of these I added the FM choke. Matching to the headphones is done by a “Ueberformer” from Dave Schmaderer. In the contest, I used a pair of sound powered phones with USIC elements from Dynalec (note that the photo shows my “self-made” phones with rocking armature elements made by Racal. The phones with USIC elements are a bit more sensitive, but the shown phones are very lightweight and comfortable).

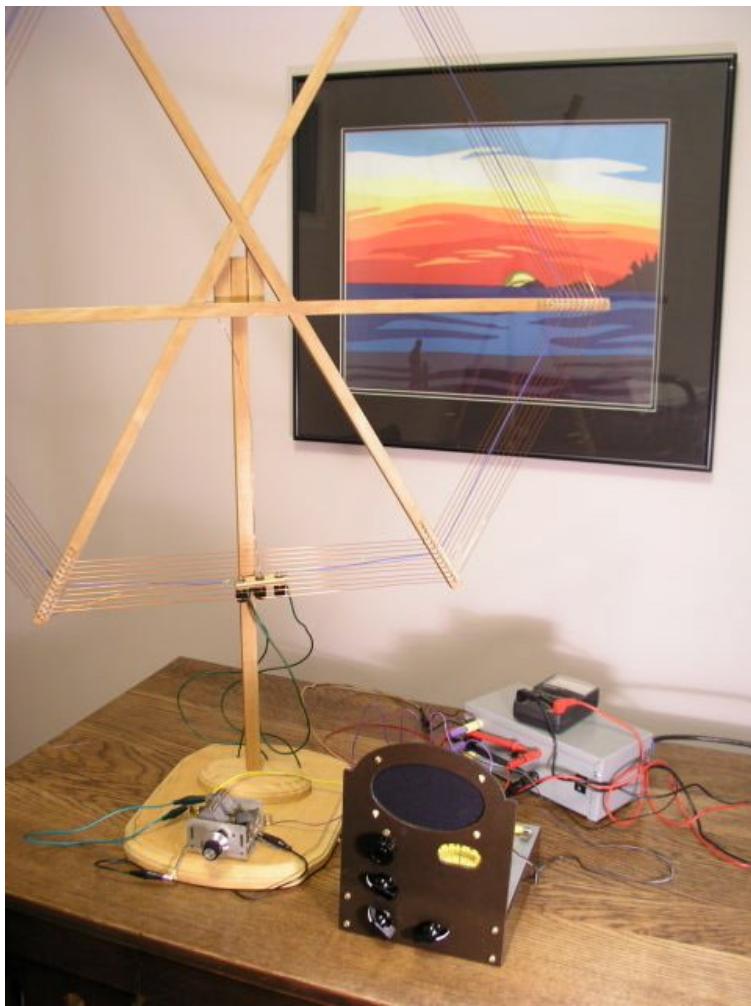
The loop does perform very well and is surprisingly sensitive. Selectivity is quite good for a single-tuned unit, especially at the low end of the band. Tuning is rather sharp, therefore the vernier dial seems to be a “must have”. What I like most is the clean sound. I found no distortions so far even in case of strong signals.

Here is a Google [map link](#) that you might enjoy viewing.



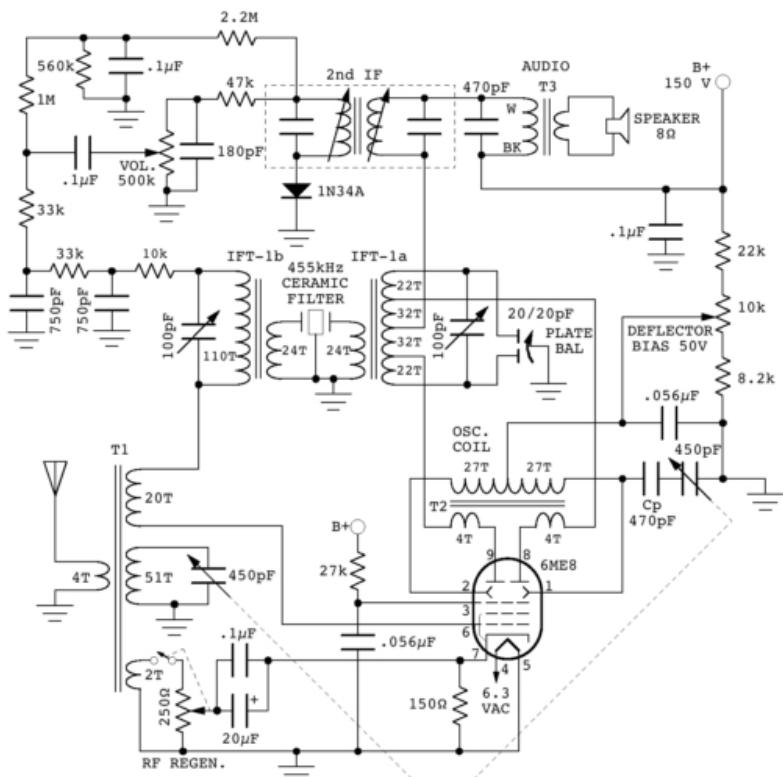
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Robert Weaver, BCB Class (superhet)



-6ME8, 1AD superhet
-30 inch diameter Tuned loop
-Used in the 2009 1AD contest (more info is shown in that section of the website).

**ONE TUBE DOUBLE REFLEXED
SUPERHET RECEIVER**
R. Weaver, January 2009

**NOTES**

1. PLATE BALANCE DIFFERENTIAL CAPACITOR FUNCTIONS AS REGEN CONTROL FOR IF.
2. BOTH SECTIONS OF THE TUNING CAPACITOR ARE EQUIPPED WITH TRIMMERS, BUT ARE NOT SHOWN ON THE SCHEMATIC. TRIMMERS ARE ADJUSTED FOR BEST TRACKING;
3. Cp IS PADDER CAPACITOR. 470pF IS OPTIMUM VALUE FOR 540-1700 kHz TUNING RANGE USING 450pF VARIABLE CAPACITOR. IF TRACKING IS UNSATISFACTORY WITH FIXED VALUE, AN ADJUSTABLE TYPE MAY BE SUBSTITUTED.
4. DEFLECTOR BIAS IS ADJUSTED FOR MAXIMUM OSCILLATOR AMPLITUDE (MEASURED WITH SCOPE AT 6ME8 PIN 2) WITH TUNING CAPACITOR SET TO MINIMUM FREQUENCY.

INDUCTORS

T1: FT-82-61 FERRITE TOROID WITH TURNS AS INDICATED (#28 AWG ENAMELED WIRE), 2 TURN TICKLER IS WOUND ON TOP OF THE GROUNDED END OF THE 51 TURN TANK WINDING;
 T2, IFT-1a, IFT-1b: FT-114A-61 FERRITE TOROID WITH TURNS AS INDICATED (#28 AWG ENAMELED WIRE);
 IFT-2: GENERIC 455 kHz 2nd IF TRANSFORMER;
 T3: BOGEN T725, 70V LINE AUDIO MATCHING TRANSFORMER.

Curtis Gamble, BCB Class (crystal)



I just used the two modules with the plexi-glass fronts and no traps.

Back to the [main index page](#).



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Select Menu

- [Home](#)
- [About Us](#)
- [Contest Results](#)
- [IAD Contests](#)
- [IAD Entries](#)
- [Antenna Matching](#)
- [Antennas](#)
- [BHAM Radios](#)
- [Crystal Contests](#)
- [Crystal Radio Entries](#)
- [Sprint Contest](#)
- [Headphones](#)
- [Projects, Mods](#)
- [Favorite Links](#)
- [Contact Jack](#)

Sub Pages

- [Main Page](#)
- [2004 Page 1](#)
- [2004 Page 2](#)
- [2004 Page 3](#)
- [2005 Page 1](#)
- [2005 Page 2](#)
- [2006 Page 1](#)
- [2006 Page 2](#)

- [Contest Results](#)

- [2004](#)
- [2005](#)
- [2006](#)
- [2007](#)
- [2008](#)
- [2009](#)
- [2010](#)
- [2006 Sprint](#)
- [2008 Sprint](#)
- [2009 Sprint](#)

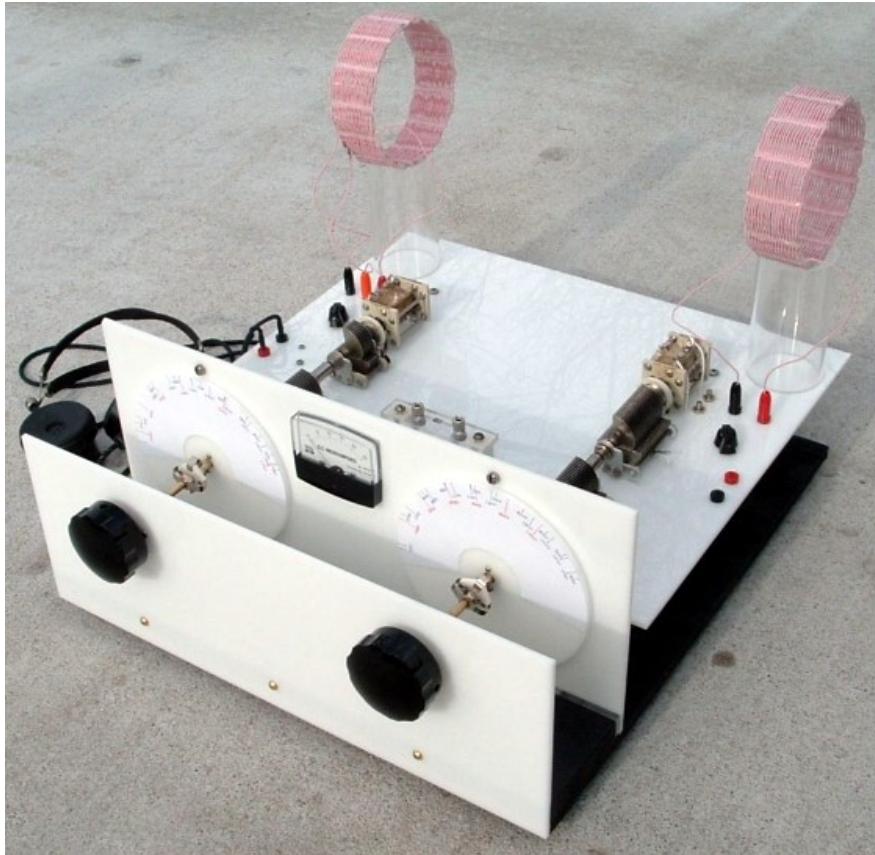
- [Previous](#)

- [Next](#)

Crystal Radios Of The 2008 Contest Entrants

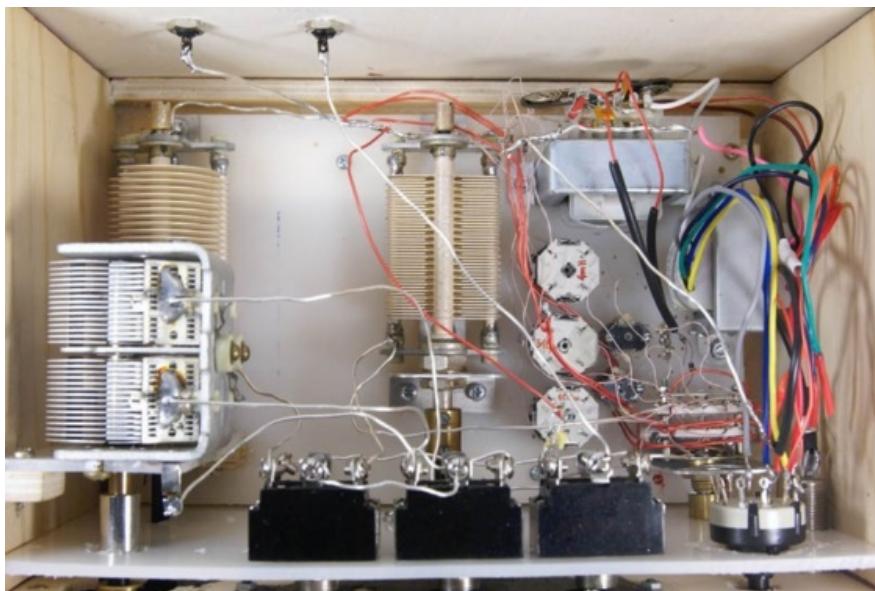
Page 4

Evan Haydon



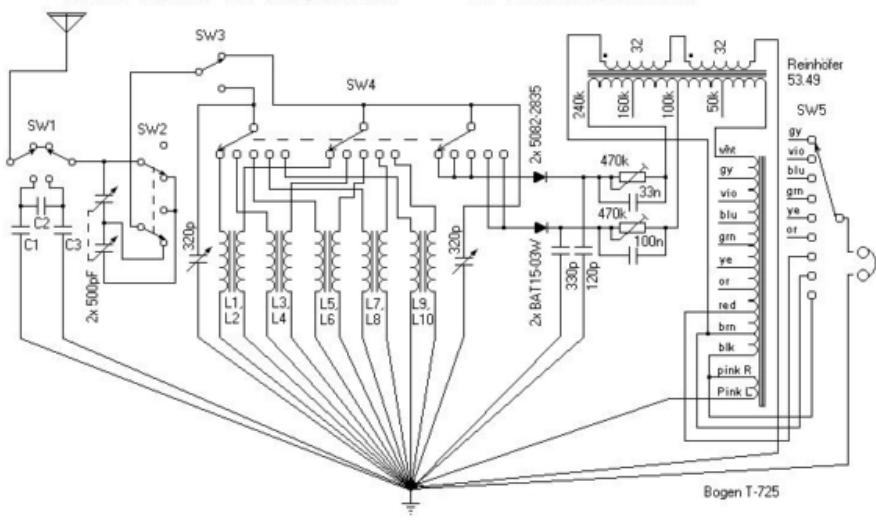
[Click here to see Evan's set that he also used in the January 2008 Crystal Set DX Contest.](#)

Ralf 'Brösel' Siemieniec



L1, L2: 2x 4000 μ H, Core P18-11 (M33), RF-Litz 80x0.02
 L3, L4: 2x 310 μ H, Core P18-11 (M33), RF-Litz 80x0.02 (2x)
 L5, L6: 2x 100 μ H, Core P18-11 (M33), RF-Litz 80x0.02 (2x)
 L7, L8: 2x 7 μ H, Core RM5 (K1), RF-Litz 80x0.02 (2x)
 L9,L10: 2x 0.8 μ H, Core RM5 (K1), Ag/Cu-Litz AWG24

SW1 - Antenna Volume/Selectivity Selector
 SW2 - Antenna Matching Switch
 SW3 - Single- / Dual-Tune Switch
 SW4 - Band Selector (LW / MW1 / MW2 / SW1 / SW2)
 SW5 - Headphone Impedance Selector



My crystal radio tunes the mediumwave (broadcast) band as well as the shortwave band, both are split into two subbands, and the longwave band. To keep the receiver small, I was using closed ferrite cores from Epcos, P18-11-M33 for the MW & LW bands and RM5-K1 for the SW bands. The coils are all done using litz wires 80 x 0.02 mm (two wires in parallel for MW and SW1) and two paralleled litz wires of silver-plated copper strands for SW2. Actually, this is the same wire as I used for the wiring, the insulation of the silver-plated litz wire is made of Teflon, which should not cause too much losses (as I hope). The antenna and detector coils are each wound on a separate core which were later stacked together.

The radio has two tuned circuits and a variable antenna coupling and can be switched between single- and double-tuned mode. Additionally, there is an attenuator in case of need, the variable antenna coupling capacitor is a two-ganged type and can be switched in series or parallel. The antenna and detector tuning caps are both silver-plated devices. Rectification is done using two paralleled 5082-2835 for the BC band and again two paralleled BAT15-03W for the SW band. The matching section consists of two transformers - a 53.49 by Reinhöfer Röhrentechnik in Germany (input impedance 240k) switched together with a Bogen T-725. I managed to get a pair of Baldwin Type C headphones which are much more sensitive than all of my modern but more comfortable types.

All is mounted at a polypropylene sheet for proper insulation. The most distant station received so far was 1419 km away in Tunisia. Could probably be more if I had another antenna than the metal made balustrade of my balcony - I live in a multi-party house, thus there is not much chance for long antenna wires.

Lem Morrison



Lem used an updated version of this set that was used in the last several Crystal Set DX and Sprint Contests.

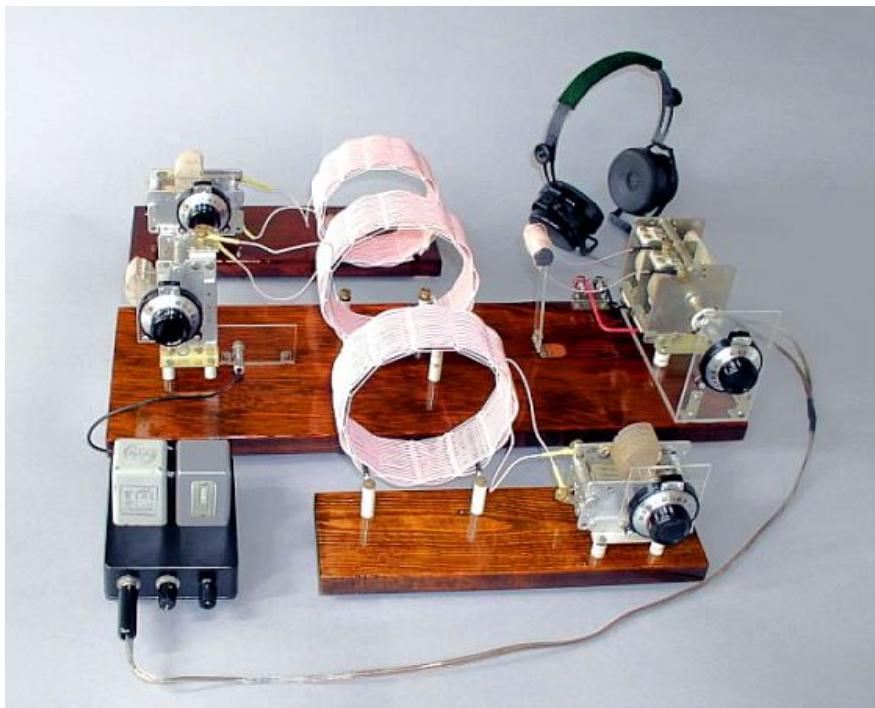
Garry Nichols

Same loop as in the photos for last winter's contest. However, I was not using the STM, only the T3/AM20 100:100k transformer and the single 107 nA Schottky. Also, I was not attaching the ground to the variable's frame and using a RFC for diode DC continuity through the variable.

The ground of the detector/audio went to the center of the loop winding > instead. I found that there was much less interference from a local FM station this way.

[Click here to see more about this set that Garry also used in the January 2008 Crystal Set DX Contest.](#)

Mike Tuggle



The infamous Lyonodyne-17, double-tuned, 12101 3RT detector, two wave traps, RCA Big Cans.

Dan McGillis



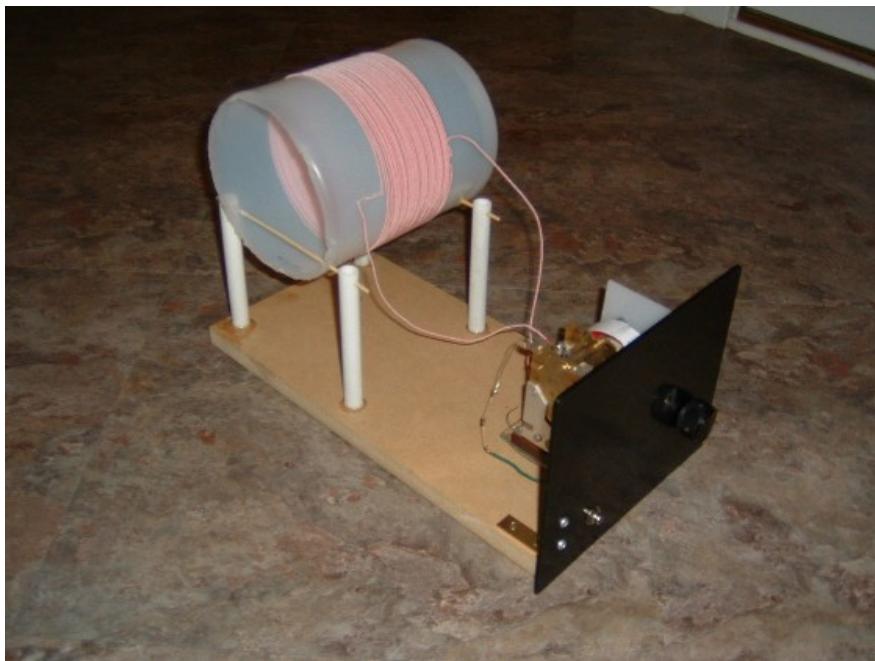
[For more info, click here to see Dan's posting on Dave Schmarder's RadioBoard.](#)

Dave Schmarder



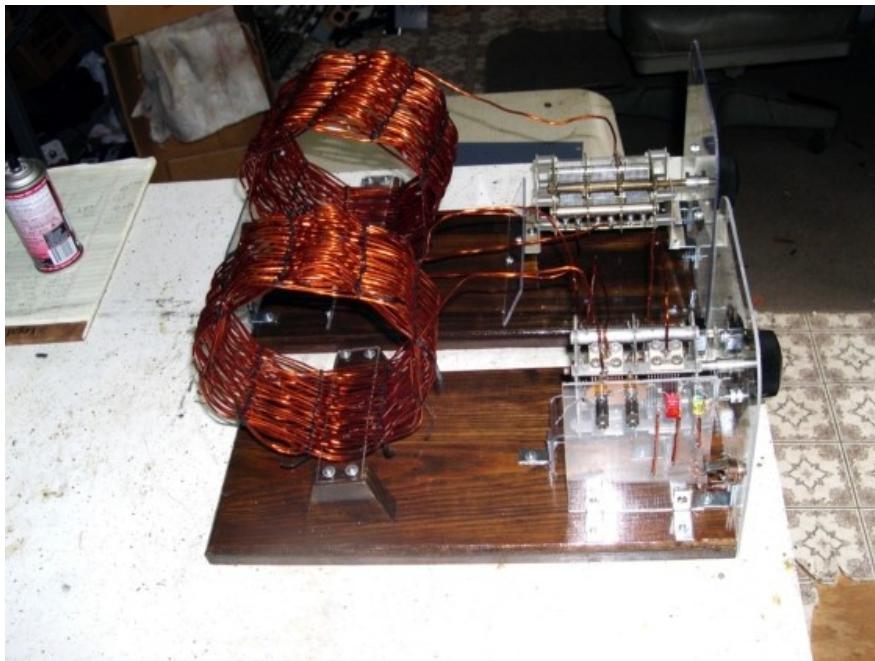
[Click here to see more on Dave's Loop Set at his fine website.](#)

Jack Bryant

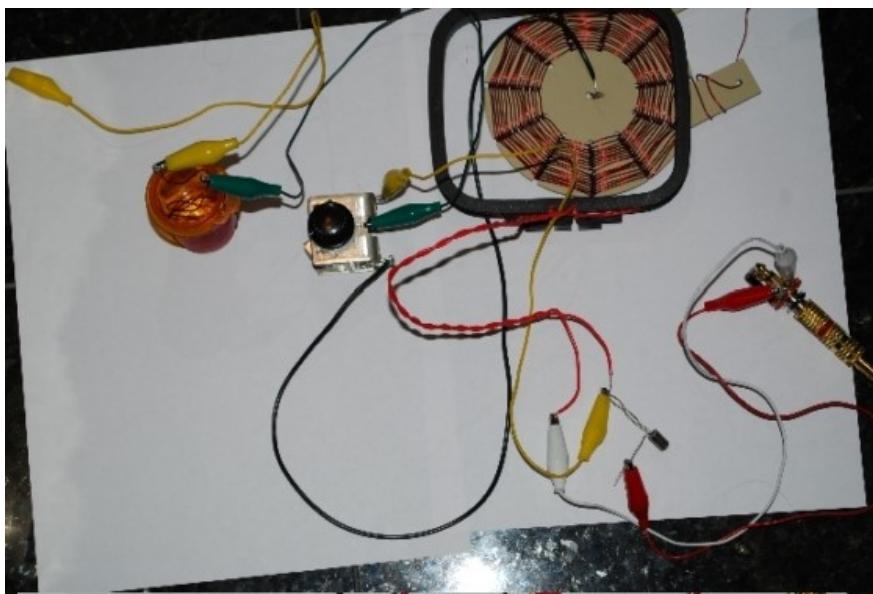


[Click here to see Jack's set that he also used in the January 2008 Crystal Set DX Contest.](#)

Curtis Gamble



Denver Cohen



Back to the [Index](#)



Select Menu

- [Home](#)
- [About Us](#)
- [Contest Results](#)
- [1AD Contests](#)
- [1AD Entries](#)
- [Antenna Matching](#)
- [Antennas](#)
- [BHAM Radios](#)
- [Crystal Contests](#)
- [Crystal Radio Entries](#)
- [Sprint Contest](#)
- [Headphones](#)
- [Projects, Mods](#)
- [Favorite Links](#)
- [Contact Jack](#)

Sub Pages

- [Main Page](#)
- [2004 Page 1](#)
- [2004 Page 2](#)
- [2004 Page 3](#)
- [2005 Page 1](#)
- [2005 Page 2](#)
- [2006 Page 1](#)
- [2006 Page 2](#)
- [2006 Page 3](#)
- [2007 Page 1](#)
- [2007 Page 2](#)
- [2008 Page 1](#)
- [2008 Page 2](#)
- [2008 Page 3](#)
- [2008 Page 4](#)
- [2009 Page 1](#)

- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

Crystal Radios Of The 2008 Contest Entrants

Page 2

Brent Seres



Set: Double tuned torroid, with Tuggle front end, using FO215 and Schottky diodes. 100k to 1 k Hammond matching transformer, and sound powered phones. Coupling is accomplished with a third torroid, primary has 3 turns in series with ground lead, secondary has 3 turns in series with main detector coil.



Dave Schmarder

For more info, visit Dave's website at: [Dave Schmarder's 2008 Crystal Set Contest Entry](#). This is his #70 Crystal Set.

Jack Hennon

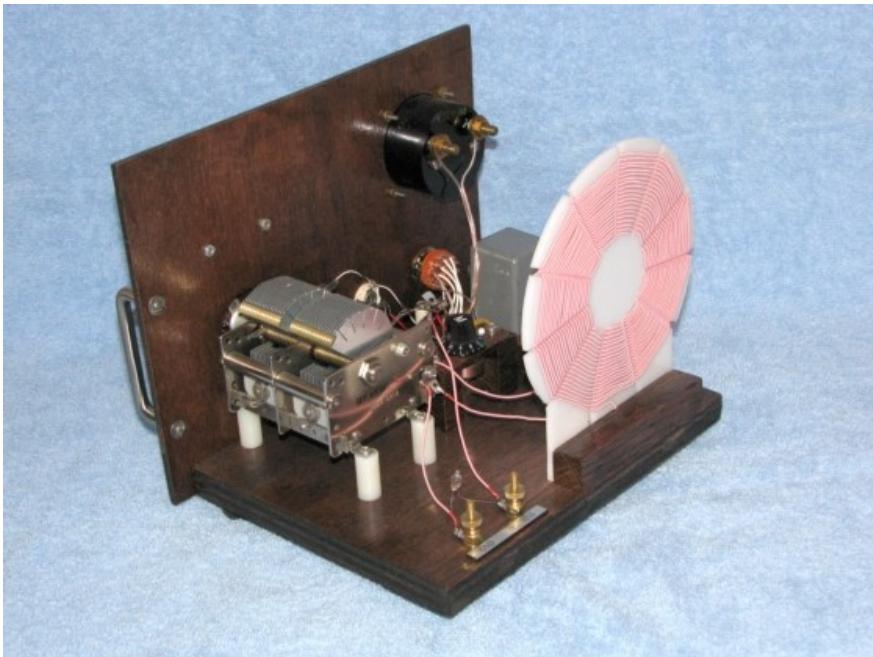


The set uses a Toggle Tuner, a Schottly diode detector with three diodes in parallel, and a UTC A27 matching transformer.

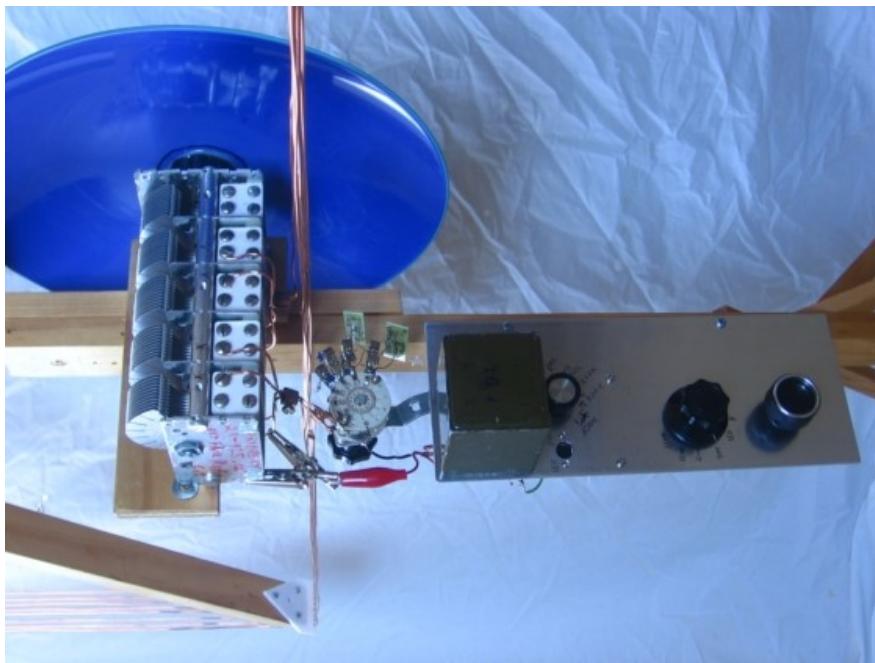
My antenna was a 135 dipole fed in the center with 45 feet of 450 ohm open wire line. I connected the feed line wires together at the set and worked the antenna as a T against ground.

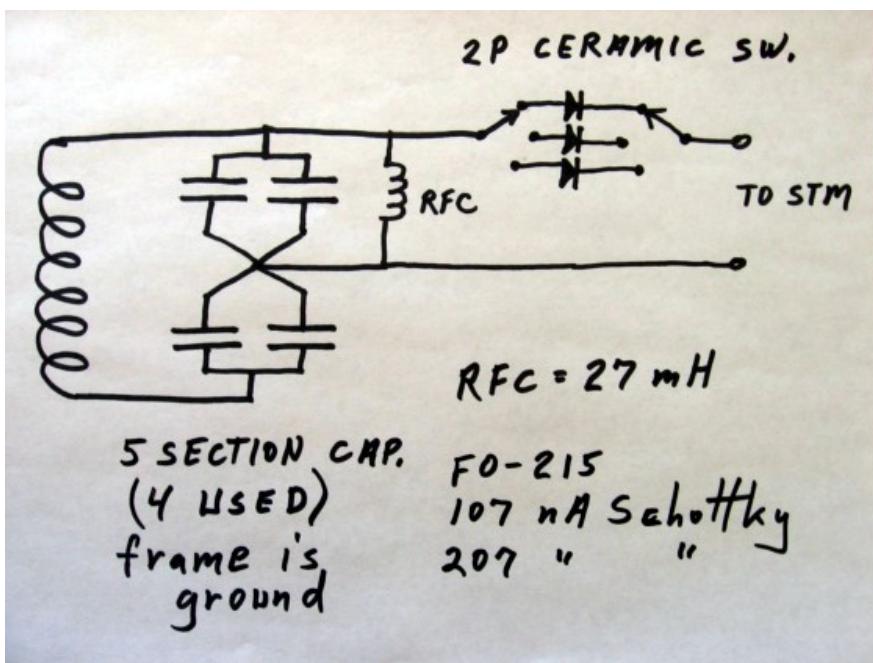
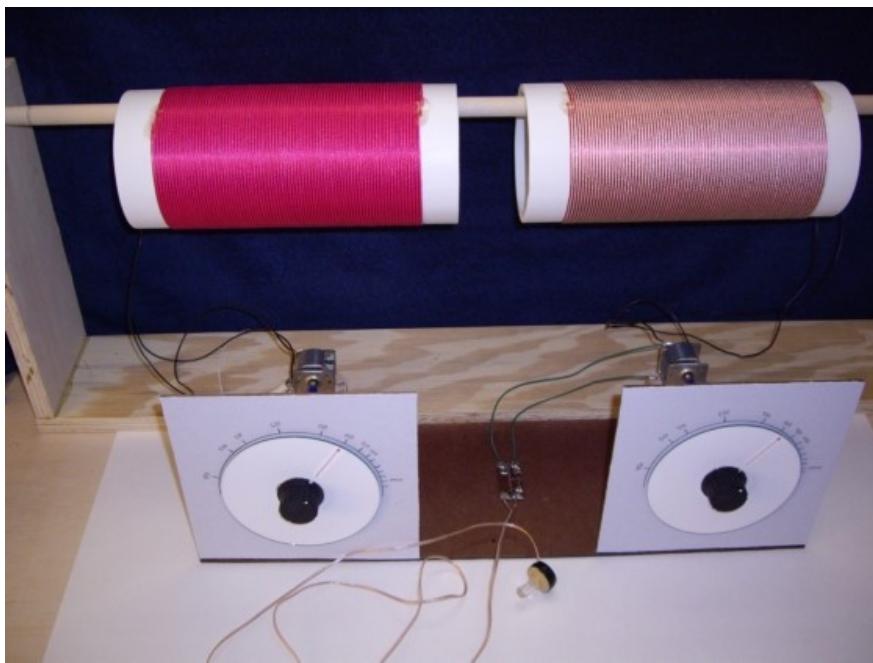
Again the contest was fun. I did better than last year, copying 100 stations. Conditions may have been better or it could be due to my new set and more sensitive headphones.





Garry Nichols



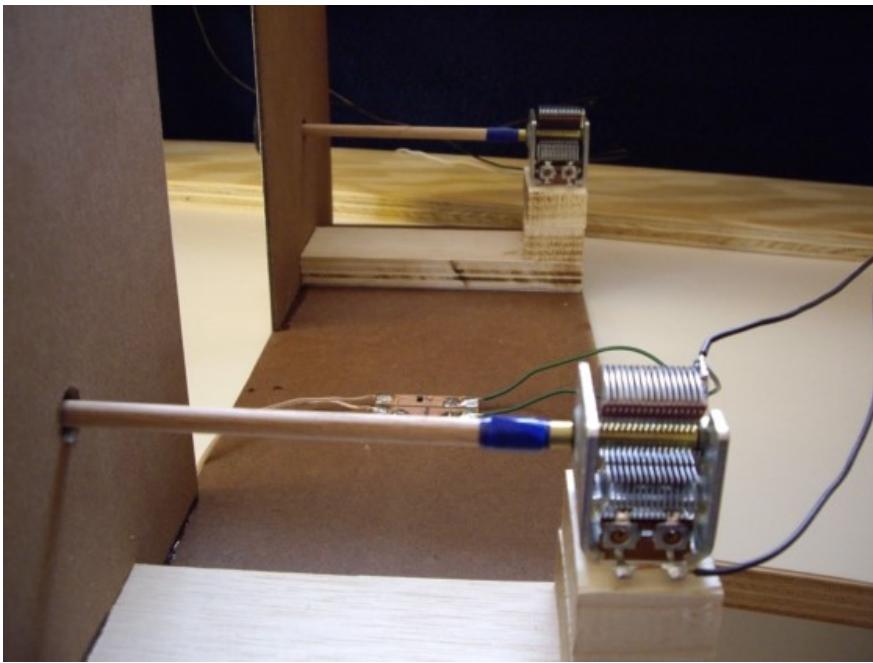
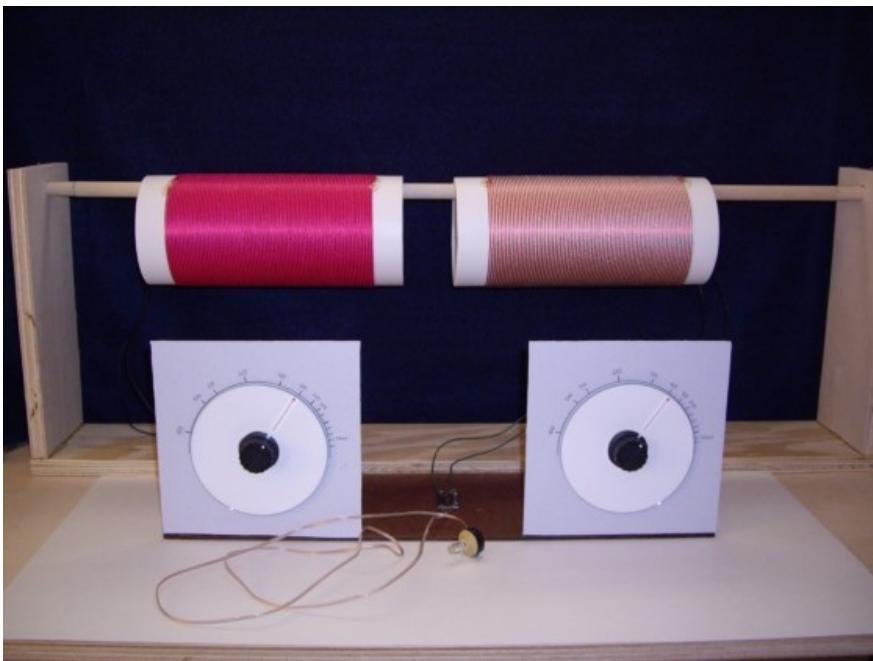
**James Kretzschmar**

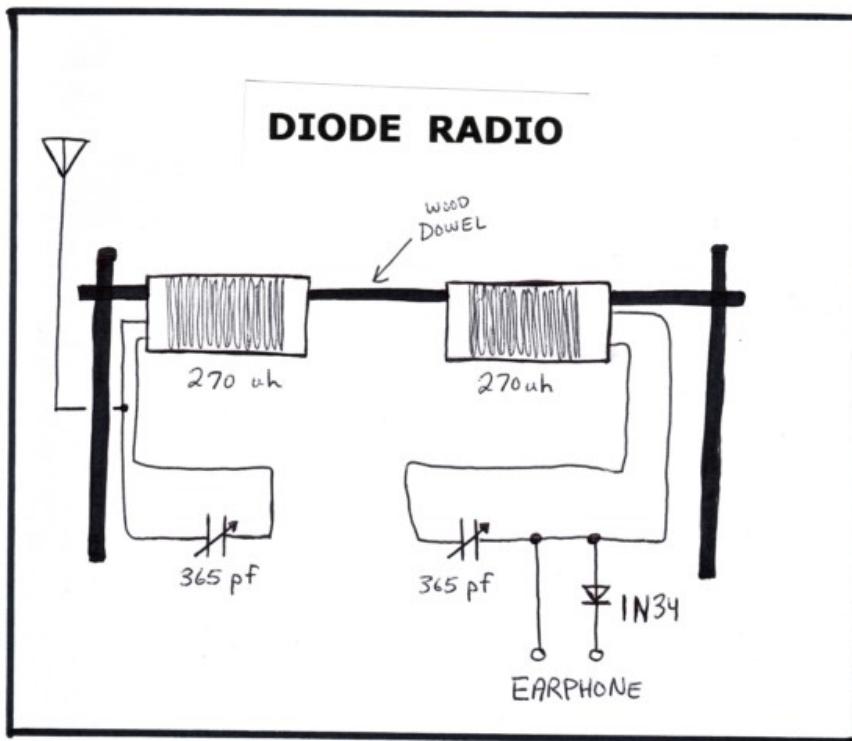
This radio is big improvement over the radio that I entered in the 2001 Crystal Radio building contest. I started tinkering in early January 2008 and finally decided on a design on 17 January 2008, and built the radio that afternoon ... ready to use the next day.

My coils are wound on 4.5" PVC pipe with 80 turns #18 wire space wound the width of the wire with nylon masonry cord. The coils actually have too much inductance, however I did not have time to change them. The variable capacitors have 1/4" dowel wooden extensions to avoid the effect of hand capacitance. To provide smooth operation and stability a 1/4" washer is glued to the front panel.

My antenna is about 200 feet of wire strung through the trees in the backyard about 20 feet up. In operation, the right side is tuned to where you want to be, then the left side is tuned for the strongest signal, the coils are moved in/out as needed for signal strength and selectivity. I have had real good results with this design.

At my location in Winston Salem, NC we have a real strong station at 830 KHz and I can routinely hear 840 KHz WHAS in Louisville, KY in the clear. Two small stations were heard during the 2008 contest: (1) WMAC 940 KHz in Macon, GA (2) CKNX 920 KHz in Wingham, Canada. A total of 35 stations were copied. A simple piezo earphone was used. I plan to tinker with this design to optimize reception.





[Continued on page 3.](#)



Select Menu

- [Home](#)
- [About Us](#)
- [Contest Results](#)
- [IAD Contests](#)
- [IAD Entries](#)
- [Antenna Matching](#)
- [Antennas](#)
- [BHAM Radios](#)
- [Crystal Contests](#)
- [Crystal Radio Entries](#)
- [Sprint Contest](#)
- [Headphones](#)
- [Projects, Mods](#)
- [Favorite Links](#)
- [Contact Jack](#)

Sub Pages

- [Main Page](#)
- [2004 Page 1](#)
- [2004 Page 2](#)
- [2004 Page 3](#)
- [2005 Page 1](#)
- [2005 Page 2](#)
- [2006 Page 1](#)
- [2006 Page 2](#)
- [2006 Page 3](#)

- [Contest Results](#)
 - [2004](#)
 - [2005](#)
 - [2006](#)
 - [2007](#)
 - [2008](#)
 - [2009](#)
 - [2010](#)
 - [2006 Sprint](#)
 - [2008 Sprint](#)
 - [2009 Sprint](#)
- [Previous](#)
- [Next](#)

Crystal Radios Of The 2006 Contest Entrants

Page 2

Peter Kerttula



The rig for the 2006 contest is a Jim Frederick design, the Hobby Dyne 2. I added crystal switching and use a reduction on the tune side capacitor.

The headphones are sound powered made from SP mike elements. A bogen transformer handles the output transformation.

The antenna is a 100 foot wire bent to fit the lot! A cold water pipe handles the ground.

Mark Roliff



The unit at the left rear is the antenna tuner. The coil is 33 turns of #22 magnet wire. The cap. is a dual 365pf variable purchased from the XSS.

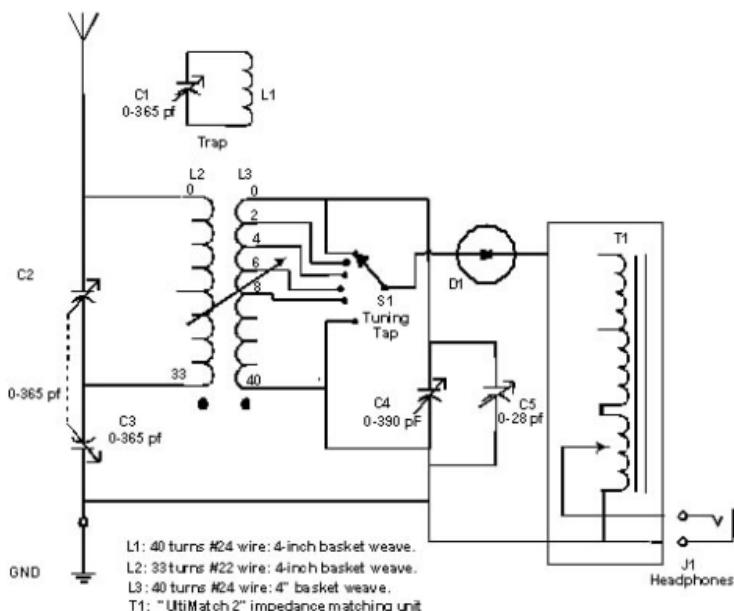
The unit at the center rear is the detector tank. Its coil is 40 turns of #24 magnet wire. The front cap. is a dual section variable salvaged from a junked radio. The smaller front section is not used. The rear cap. is used for band spread.

The unit at the right rear is the inductive trap. The coil is 40 turns of # 24 magnet wire. The cap. is a single gang 365pf purchased from the XSS.

At the right front is the detector stand mounted on a salvaged trophy plinth. The mass of the wood and marble lowers the detector stand's sensitivity to vibration. All logged stations were heard with the cat whisker and galena crystal. At the start of each listening session, I would tune in a weak local station using a germanium diode and then disconnect it and match the signal's strength and clarity to a hot spot on the galena crystal. The whole process took less than a minute. The crystal was purchased from the XSS.

The unit at the right front is my version of Steve Bringhurst's UltiMatch 2. I used a pair of RCA "Big Cans" connected to the Red tap of the Bogen transformer.

Mark Roliff



..Note that the audio impedance matching unit is a copy of Steve Bringhurst's UltiMatch 2 ... only the Bogen T725 transformer was used, and the Benny was bypassed ...

Mark Hampton



My interest in crystal radios was less than a month old when I found out about the DX contest. The result is my entry which, for reasons that will become obvious, I have dubbed the Comedyne. If you find any of this humorous rest assured that you are laughing with me and not at me.

I entered the formula for calculating coils into a spreadsheet. Later on I modified the formula so that I could enter the diameter instead of the radius and promptly forgot that I had done so. The coil form I used was 4 inch PVC that I turned down and threaded at 22 TPI. When I went to calculate the length I entered a 2 instead of 4 and came up with a length of 5 inches. This resulted in a coil of 800 uH instead of the 280 to 300 uH that I wanted. I was too green to recognize that this was not right and of course the coil was all soldered up before I found my mistake.

The one thing that went right on the coil was the winding and tapping. I had tried various methods of making taps on a coil with little success. Seems I don't have the patience, eyesight and requisite number of arms to do a decent job of it so I came up with a new (at least to me) idea. I drilled a line of small holes at every 5th thread. I placed the coil form in the freezer for a while to shrink it and then quickly wound the coil. Then I scraped the enamel off each wire that passed over a hole with a sharp pointed hobby knife. I bent a small hook in the end of each tap wire passed it through the hole, turned it 90 deg and "hooked" the winding. I placed a tiny dab of flux on the wire and then folded the tag end of the hook down tight on the coil. A dab of solder finished the job. The result was a nice tight, neat (if slightly over-wound) coil. I bridged all the taps together with a loom to help take the stress off of the solder joints.

The only caps I had were some I ordered from Antique Electronics to play with because they were cheap. They are 4 section totaling 240pf and 540 deg. rotation. I found out why they are so cheap. Nobody in his right mind would want a VC designed for PC board mounting. I finally figured out a way to mount them and only destroyed one in the process. I didn't have time to order a shaft extension so I machined one out of some plastic rod.

When selecting a diode from two dozen 34As two of them accidentally touched together and the sound level really jumped up. I called them a pair and mated them forever. My antenna is an almost 300 foot wire running due north/south. It ranges from 15 to 20 feet off the ground. The ground is a piece of ½ inch black pipe driven 6 feet into the ground.



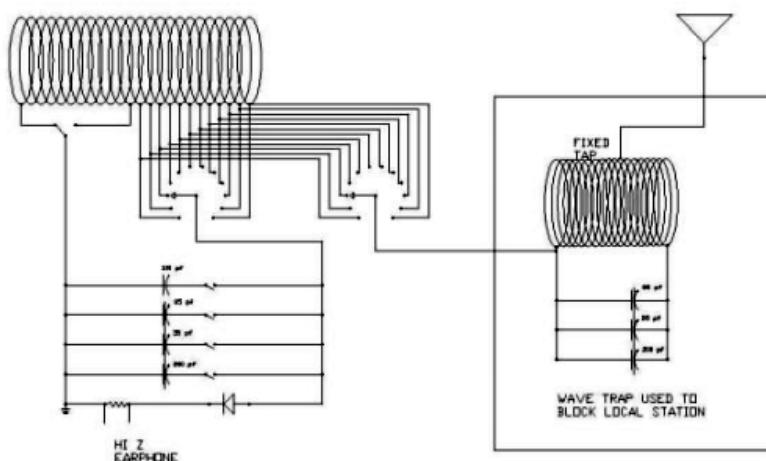
I used 12 pos. rotary switches from Antique Electronics for the antenna and tuner taps. For the other switches I used the slide type strictly for looks. (Certainly not for the "ease" of mounting!) The tuning knob and slide switches are from Radio Shack.

Four of the slide switches are for the capacity. 200pf, 30pf, and 85pf on the variable and a 150pf fixed cap. The other switches the ground to switch out half the coil. My grand plan was to be able to do some short wave tuning. (I did manage to do some.)

I'm an admirer of Art Deco and Arts and Crafts design so I set out to make a case for the radio that would look at home in a room designed by Frank Lloyd Wright. I also wanted it to look like it had been around for 50 or 60 years. The sides are the very last scraps of some birch plywood from a project I did over 6 years ago. The remainder is solid oak and some oak trim that I modified. An artfully sloppy stain job (left dark in cracks and crevices and lighter on the corners and edges) with Minwax English Chestnut stain gives the look of age. It is finished with three coats of Deft semi-gloss. I am more or less pleased with the result. The trim above the faceplate is a little too wide and I'm not crazy about the flat top. I may do something about the top.

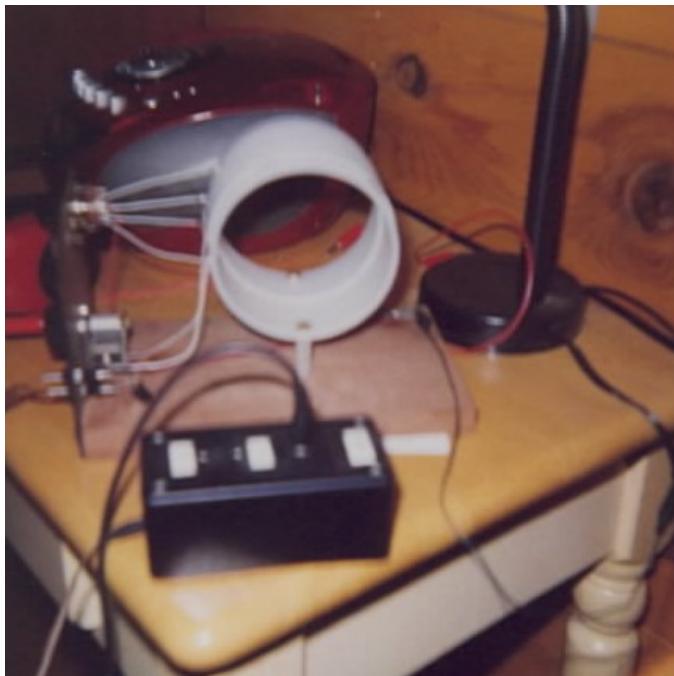
The faceplate is 1/8 in plastic that I found laying around the engineering shop at work. I made a milling template on Autocad and adhered it to the plate. After milling I soaked it off with some WD-40. I then modified the Cad drawing for the graphics and printed it out on some parchment looking card stock that I found at Hobby Lobby. Adhering the graphic onto the faceplate in proper alignment was another comedy of errors. Needless to say there are some creases and wrinkles that worked out perfectly in my plan for the "aged" look. Two coats of spray poly were applied to protect the paper.

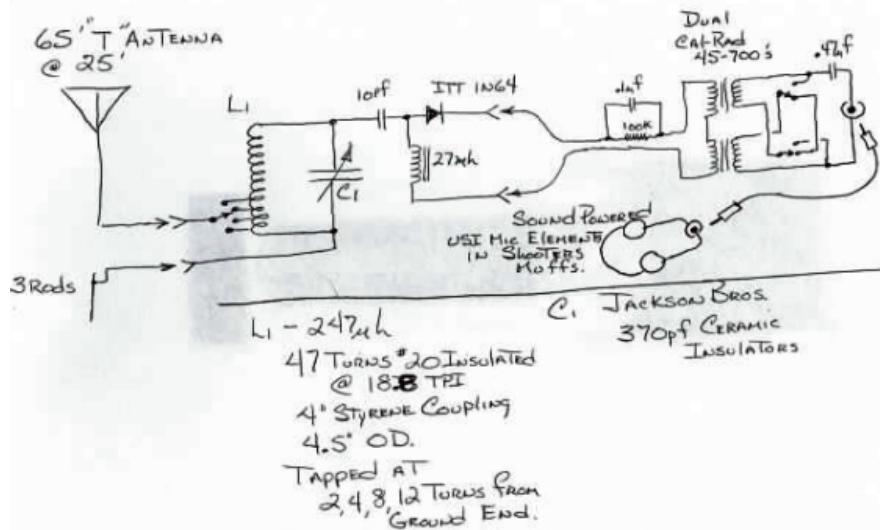
The back plate is a 97-cent clipboard from Wal-Mart. I cut it to fit and shot it with some cheap black spray paint. It has the perfect cheap-black-fiberboard-radio-back appearance. Maybe because that's what it is.



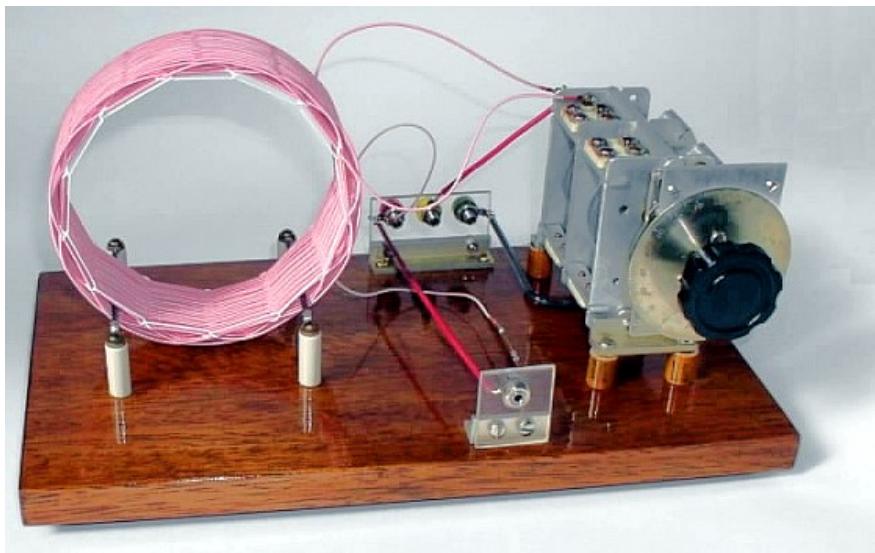
The set tuned very broadly. That may have to do with the huge coil. A local was smeared all over the dial in the daytime and half of it at night. A hastily constructed trap was used to block the local until they signed off at 11PM. Then I would reconnect the antenna directly to my set. Even switching out half of the coil had little effect on the selectivity. Strong stations like WHO and WWL covered a lot of my tuning range. Using the trap as an antenna tuner may have helped but I wanted to stay within the hobby class regulations.

Still I think I did pretty well. I managed to get about 35 stations for a score of just over 55,000 points. The furthest was CBC in Vancouver BC. I will wind a proper coil for the set when time allows.

Michael Branson



Mike Tuggle



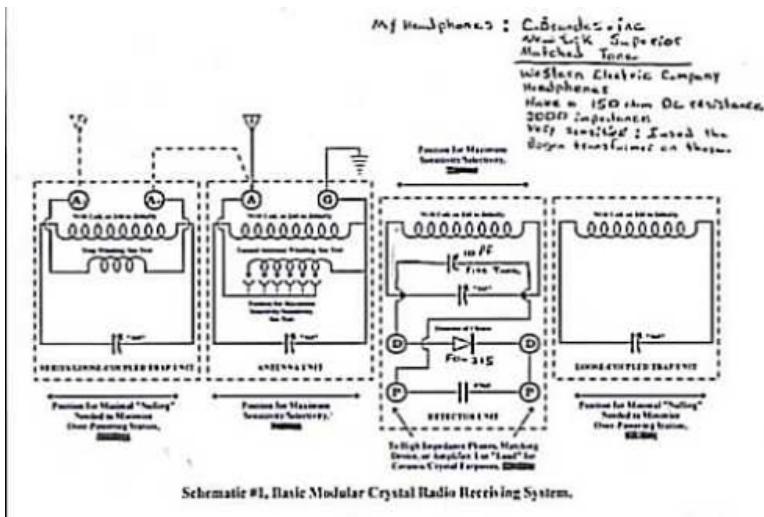
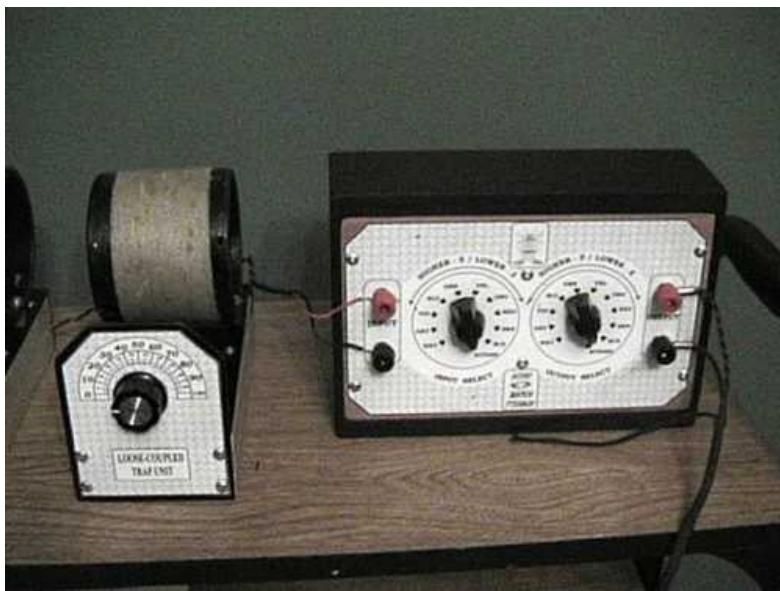
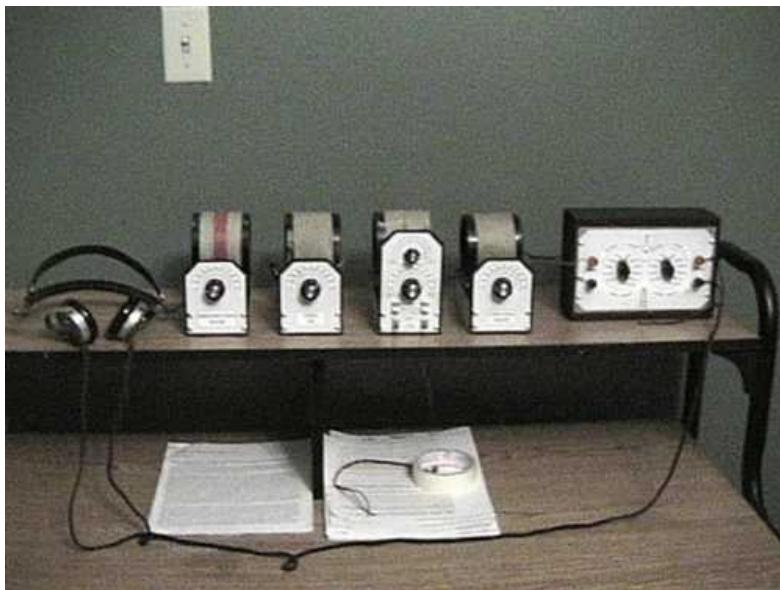
...Turned out to be quite a contest. Conditions were very flat until the second Friday (20 Jan.); then propagation really picked up. Area T-storms produced a moderate static level Sat. & yesterday, but good prop. seemed to persist.

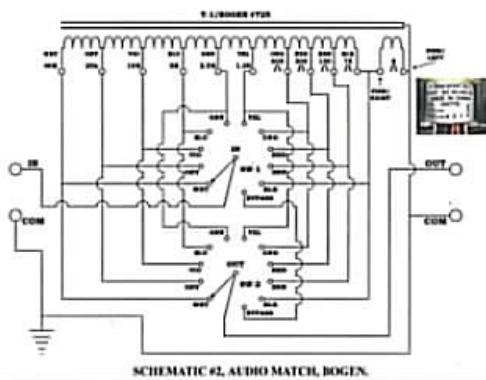
Same set as last year's event, except I did put a lead telluride rockstand on the stronger local stations. (This was the same detector I heard KRVN 880 Nebraska on several contests back. But that was on the Lyonodyne 17 set.)

Two of the stations heard were new: KXTK 1280 never heard before on any set; CFAC 960 first heard in last year's 1-AD contest.

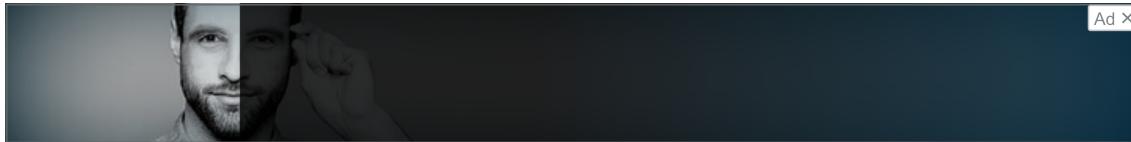
Mercifully a clandestine neighborhood super noise source held off during prime listening hours ...

Sean Whitacre





[Continued on Page 3.](#)



Select Menu

- [Home](#)
- [About Us](#)
- [Contest Results](#)
- [1AD Contests](#)
- [1AD Entries](#)
- [Antenna Matching](#)
- [Antennas](#)
- [BHAM Radios](#)
- [Crystal Contests](#)
- [Crystal Radio Entries](#)
- [Sprint Contest](#)
- [Headphones](#)
- [Projects, Mods](#)
- [Favorite Links](#)
- [Contact Jack](#)

Sub Pages

- [Main Page](#)
- [2004 Page 1](#)
- [2004 Page 2](#)
- [2004 Page 3](#)
- [2005 Page 1](#)
- [2005 Page 2](#)
- [2006 Page 1](#)
- [2006 Page 2](#)
- [2006 Page 3](#)
- [2007 Page 1](#)
- [2007 Page 2](#)
- [2008 Page 1](#)
- [2008 Page 2](#)
- [2008 Page 3](#)
- [2008 Page 4](#)
- [2009 Page 1](#)
- [2009 Page 2](#)
- [2009 Page 3](#)
- [2009 Page 4](#)
- [2009 Page 5](#)
- [2009 Page 6](#)
- [2010 Page 1](#)